The Bay Area's Computer Magazine

April 16, 1990 • 68

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1-2-3 Designer & Lotus Founder Mitch Kapor

...On Creativity, Standards, And Building Better Software.

Story on page 32

MACINTOSH:

Installing & Using QuickMail *Page 56*

BMUG Previews System 7 *Page 162*

LOTUS UPGRADES

"Release 3.0 is Lotus's intended 'power' version. But with that power comes the hardware requirement for a 286 or higher machine."

STORY ON PAGE 130

UNIX CONFUSION

"The success of UNIX has been a mixed blessing. There are so many different UNIXes in distribution that the application programmers find out very quickly that UNIX is never just UNIX."

STORY ON PAGE 158

DVORAK'S OPEN LETTER CAMPAIGN

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STORY ON PAGE 198

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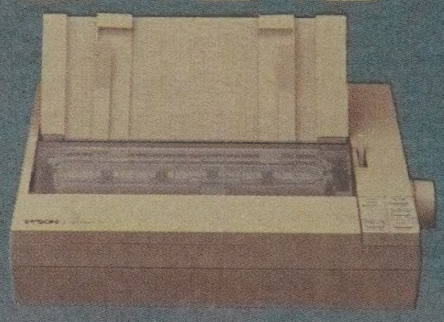

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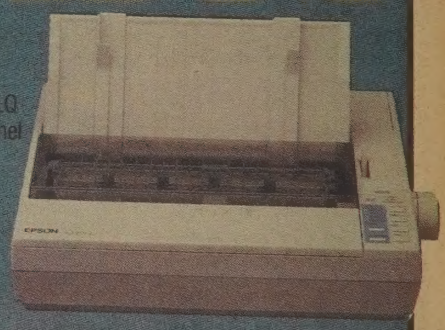

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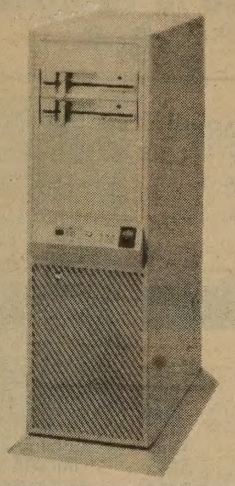

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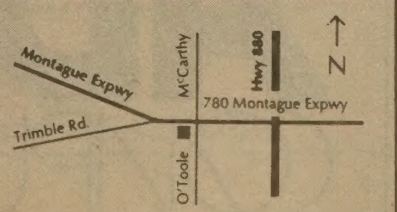

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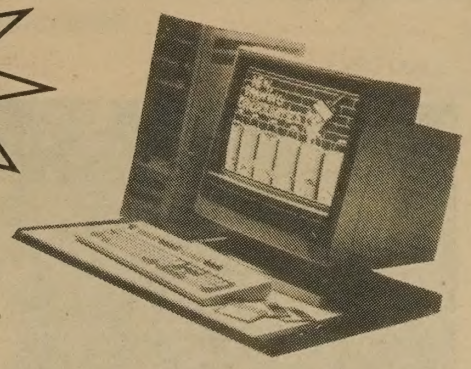

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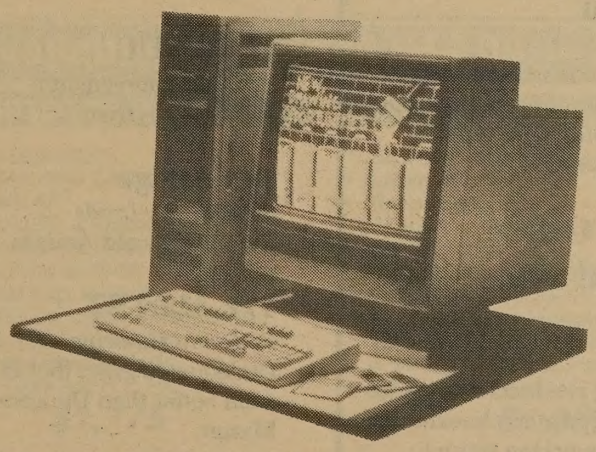

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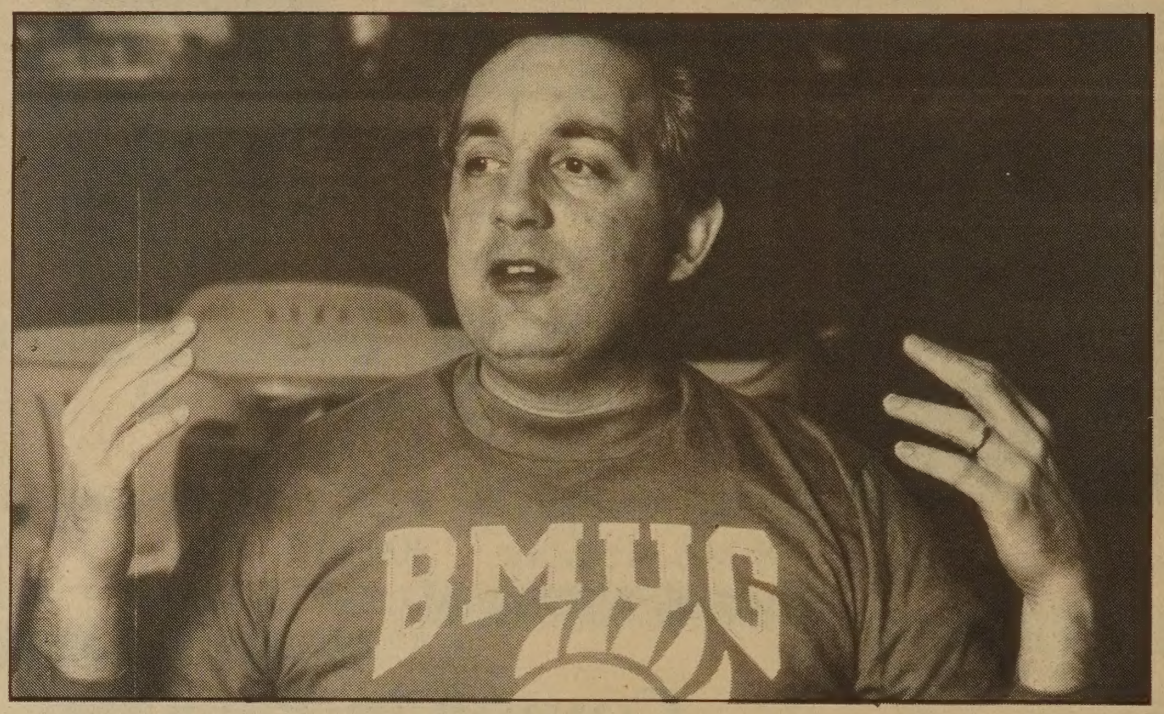

COVER STORY

80

1-2-3 Designer And Lotus Founder Mitch Kapor

On Creativity, Standards, And Building Better Software

By John Perry Barlow

Cover and contents photos: Michael Jay

A freewheeling discussion of the state of the industry, where it's been, where it's going, and how to make it better.

In town for a BMUG presentation, the man whose software changed corporate America is now—among other things—in the business of creating great Macintosh products.

BUSINESS SOLUTIONS

50 **Computing On The Go**

By Ed Kahn

A series for the outbound computer user on portable machines and using them with your office system. This month: better keyboards for portables, and Tandy's bargain-priced portable word processor.

56 **Networking The Mac Office: Exchanging Notes And Files With QuickMail**

By Mary Eisenhart

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By Craig Bobchin

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Drakkhen, a game that might be even better than Dungeon Master.

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By Birrell Walsh

Once largely the province of academic research, neural networks are beginning to offer practical benefits and become relatively affordable.

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By Carolyn Jorgensen

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Useful Resources, Tips And Tricks

By Lenny Bailes

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Fantasizing about better documentation.

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By John C. Dvorak

Dvorak writes open letters and tells it like it is to the CEOs who need to hear it.

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Output Display	VGA monitor, Multi-Sync, Analog RGB monitor
File Output	GIF, TIFF, PCX, IMG, or Jovan proprietary VI format
Form Factor	Single slot PC/XT/AT bus

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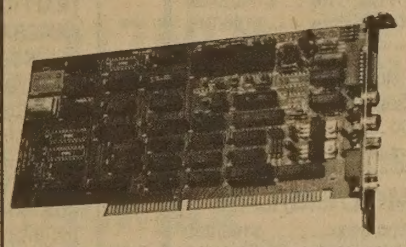

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Switches	Automatically Switches Signal to correct output NTSC or S-VHS Output Fixed Frequency or Multi-Frequency monitor internal of Sync-Locked Color Burst
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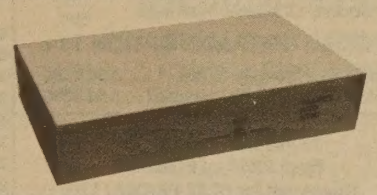

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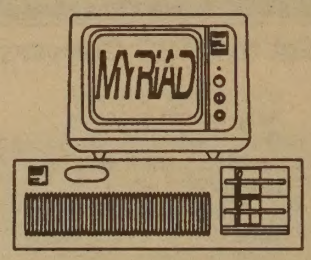

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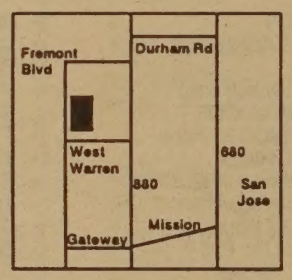

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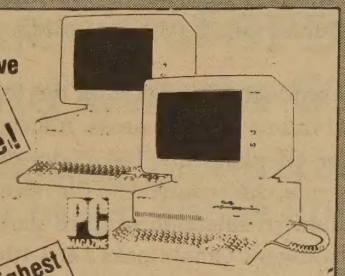

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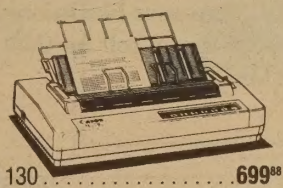

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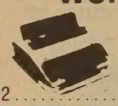

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LETTERS

From The Database Trenches: It's A Jungle Out There

On reading your interview with Roger Sippl and Phillip White of Informix, I have to say that Roger Sippl's view of Informix as a practical, pragmatic product is stretching things.

I just finished evaluating Informix, Oracle, Ingres and Sybase for the company where I work, as we are getting ready to convert our computer operations to relational database technology. My conclusion was that all four of the systems have major weaknesses, and Informix is especially weak.

When talking about database systems for mainframes, minis, and PCs, I think it's important to remember what they're needed for, and how much a company risks by standardizing on one. The need for converting to a DBMS is to pull together a company's data and programs into one format to eliminate the islands of automation that today's company consists of. Also, you want to empower your programmers and users with easy-to-use and powerful system development tools, to get out of the "we can't write you that program for another eight months" syndrome.

The risks are financial. We see the initial cost of obtaining a DBMS for our VAX-and-PCs environment as being about *1.2 million dollars*. That just gets us in the door (the DBMS software and disk systems for the VAX). That doesn't cover the costs of applications conversion, or buying off-the-shelf applications software. Heaven forbid that the DBMS company goes out of business or stops supporting the product line.

We frankly could care less about multimedia and hypertext and snazzy new spreadsheets. We need all the help we can get prying a '70s and '80s technology set of systems into the '90s. In particular, we have a lot of RMS files and COBOL and BASIC programs on our VAX, and dBASE/Clipper programs and files on the PCs.

What our company, and many companies, will need from a database management vendor is the following:

•The ability to run the same in-house program system—programs, screens, report formats and graphics—on all platforms, essentially unmodified. This includes DOS, UNIX, and VAX-VMS in our case.

•A fourth-generation language (4GL) to write the programs in, which may invoke screens, graphs, reports and other programs. SQL alone is not enough—local variables, character manipulation, and constructs like DO-WHILE are also required.

•The ability to read from and write to existing dBASE and VAX RMS files. It is not sufficient in a corporate environment to only be able to convert dBASE and RMS files to the new DBMS format. Rewriting software is slow and costly, and a new DBMS needs to be able to coexist with older systems.

•Pre-compilation of 4GL programs to C, from which they would be compiled to object code. This makes it possible to run programs efficiently, and to be able to run the programs on some machines that don't have the DBMS in place. This is similar to what Clipper gives us now with our dBASE program.

•Access to the database from spreadsheet programs (Lotus in our case).

•Sufficient variety and depth of off-the-shelf applications systems for the minis/mainframes that are written to work with the DBMS.

The product offerings from the four companies fall flat in one or more areas. Informix has a good 4GL for all platforms, but it doesn't compile to object code, can't use dBASE files dynamically, and has a limited selection of third party mini/mainframe software. Oracle lacks a 4GL (they claim to be working on this) and you're expected to embed your programs in your screens, not the other way around. Ingres has good 4GL end-user tools, but put it on a DOS PC and it's huge, and missing several pieces; on the PC the programs don't compile and require Ingres to be present. Sybase doesn't run in DOS at all on a standalone PC, and like Informix lacks the wide selection of third party large-system applications.

I don't mean to quibble or to demean the major step forward that these four Bay Area companies are taking into the future of computing. My intention is to point out that we in the D.P. management trenches are being offered only partial solutions (at substantial risk) to major system integration problems. We need better tools, and we need them today. Far from a time for self-congratulation, this is a time for companies like Informix to come down from hype(r)-space, roll up their sleeves, and get down to business.

Mitch Gordon
San Francisco

Two Views Of OS/2

My first encounter with the idea of an operating system for a computer came when Radio Shack announced OS/9 for the Color computer six or seven years ago. By the time I bought my first IBM clone, about four years ago, it was already apparent that DOS was the only way to go.

My move into the Windows environment was gradual and easy. On my XT I thought it was fun. Then when I moved to a 286 machine and began using Windows 286, it began to show real promise. Now on my 386, Windows 386 only enhances that promise. It's a real whiz-bang environment with limitations that should not be there. And it crashes for no apparent reason a little too often.

We keep reading about the problems of moving people to buy and use OS/2. Microsoft and IBM seem at a loss as to why this move is so slow, perhaps even dead. To us users, the reasons are obvious. I have several thousand dollars invested in DOS and Windows programs.

I don't care so much about the DOS programs. On my first XT, WordStar 2000+ was a wonder. Now I don't even plan to purchase the most recent upgrade of WordStar 2000+ because AMI, which runs under Windows, will import all those old files and doesn't suffer the limitations of a text-based word processing program. This move from WordStar 2000+ to AMI was gradual and easy. I didn't have to give up the one to have the other. WordStar 2000+ still rests on my hard drive, just in case.

"We frankly could care less about multimedia and hypertext and snazzy new spreadsheets. We need all the help we can get prying a '70s and '80s technology set of systems into the '90s."

DOS killed CP/M. And perhaps eventually OS/2 will kill DOS. Yet we must consider the matter of numbers. CP/M had a fairly large installed base, but DOS users far outnumber those of CP/M. You can shove a pussycat across the room, yet a lion must be enticed.

Microsoft and IBM might learn a lesson from us users who were enticed by Windows and the wonderful programs, like Aldus PageMaker, that run under this environment. A Windows compatibility box for OS/2 would give me an incentive to buy OS/2. Why should I buy PageMaker for OS/2 when the Windows version works so well? The OS/2 version cannot even print on my HP LaserJet. I have neither the money nor the space for two computers.

I wrote to Microsoft asking about OS/2. After over two months, I received a reply which stated that OS/2 is not a retail product. It is only available with systems from companies like Compaq. How can they expect us to move to OS/2 if we cannot even buy it?

Ron B. Combs
San Jose

With regard to Paul Hoffman's article "OS/2 and Microsoft Windows: Manufacturers Discover That Forced Reality Doesn't Work" (January), I would urge Mr. Hoffman to take a closer look at reality. Neither OS/2 nor Windows are as unpopular as Mr. Hoffman suggests.

There is a widespread misconception that OS/2 is just a bigger, faster, more expensive version of Windows. Although many Windows applications will migrate to OS/2 and become more powerful in the process, OS/2 is primarily a platform for enterprise-wide, as opposed to single-user, computing, but without sacrificing the paradigm and benefits of the single-user graphical interface. Viewed in this role, OS/2 is already a very popular operating system indeed. Everything from major airline terminal control and reservation systems to bank auto-

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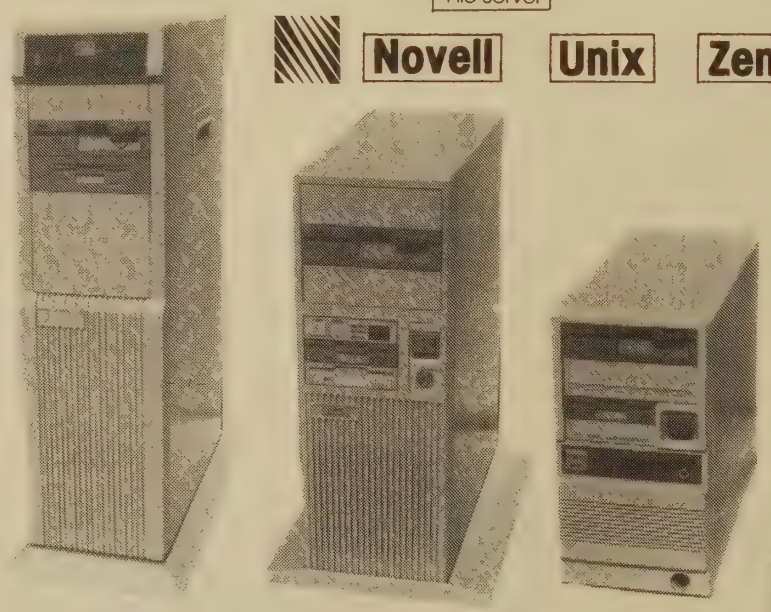

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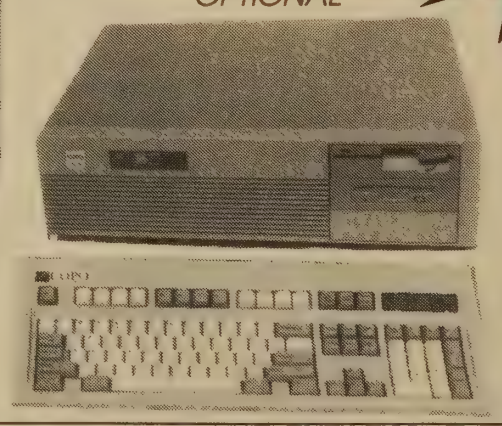

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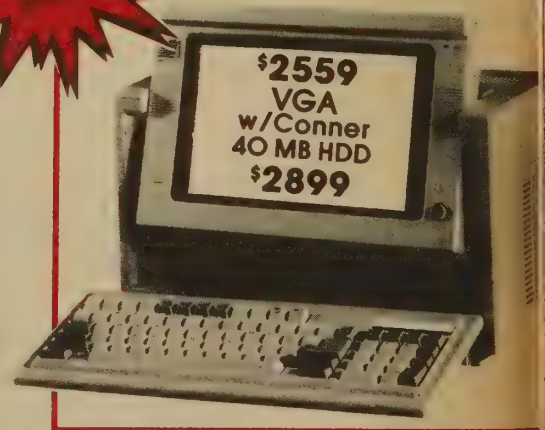

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LETTERS

mation and autoteller systems is being implemented under OS/2 today. OS/2 is a better vehicle for stealing mainframe thunder than UNIX.

Windows, on the other hand, is simply the best unifying environment for single-user applications. I have first-hand knowledge of the forthcoming Windows 3.0, and not even DESQview can hold a match to its multitasking capabilities for non-Windows programs, not to mention the superior ease-of-use and integration of Windows applications. This is an environment one can work in all day without ever returning to DOS. Future releases aside, it is becoming increasingly difficult to find a corporate setting where Windows is not in use—hardly the definition of "unpopular."

I find it amusing that so many of Mr. Hoffman's friends primarily use the OS/2 "compatibility box" and noteworthy that so many run XENIXs. Perhaps his views on operating environments are the product of his environment.

John Willis
Monrovia

Disgruntled Former Amiga User Strikes Back

This letter is in response to Mr. David Rohrl's "Even More Offended Amiga Users" letter which appeared recently in the Letters column.

Frankly, I am tired of Amiga users whining like little children any time somebody says something about the Amiga that is not complimentary, or doesn't go out of his or her way to mention the Amiga in an article. These are the facts, Mr. Rohrl:

1. The PC and the Macintosh are the two most popular consumer computer platforms.

2. The PC and the Macintosh are the two most popular business computer platforms.

3. There is much more MS-DOS and Macintosh software than Amiga software.

4. There are dizzyingly more peripheral options for the PC and Macintosh than for the Amiga.

Just for the record, I had an Amiga 1000 for almost two years and I finally sold it in frustration. The only person I could find to buy it was somebody who wanted to take it apart and experiment with the components. The user interface was abominable compared to the Macintosh, the machine kept crashing all the time (v. 1.3 OS), high-resolution mode was unusable because of flicker, and it was as slow as molasses with a hard disk compared to the PC and Macintosh.

Whenever I brought up these points with my Amiga dealer, he would simply give me excuses ("It's a brand new machine," "Commodore is working on it," "Wear polarized sunglasses to take away the flicker," etc.) and would then recite the Amiga's cost advantages. Well, Mr. Rohrl, I'm afraid cost advantages alone are not going to sell an ill-supported and faulty non-standard computer. At least when the Amiga first came out it had technology on its side, but now it's a technological dinosaur compared to 25 MHz PCs and Macintoshes.

How many businesses and consumers do you think will buy a computer they have to wear sunglasses in order to use? We are all a little smarter than that. After battling with these intolerable defects, I decided to get the real thing and purchased a Macintosh IIci.

The Macintosh and PC have excellent networking support, outstanding business and productivity applications, can communicate with one another, offer outstanding peripherals and output devices, and together provide a business with its total computing solution.

On the educational front, only an exceptionally brave student would purchase an Amiga—Apple has an excellent educational purchase program with which a Macintosh IIci could be purchased for a very competitive price. At my university (UC Berkeley) I have not seen a single Amiga in use. If I want to print out my Macintosh document, all I have to do is go to my computer lab, or just stop at any of several dozen copy/graphics houses around campus. How many universities and copy/graphics houses do you see using the Amiga, Mr. Rohrl?

And about some things you said in your letter:

•"Quite frankly, Amigas are at least as widely used for video production as for pure 'game machines.'" Is this good?

•"Well over a million people have decided that the world of MS-DOS and Macintosh computing have failed to meet their needs, and have purchased Amigas instead." Mr. Rohrl, "well over" *three million* Macintosh systems are in use, as well as a countless number of PCs and clones. The Amiga's numbers are a drop in the bucket, and that fact speaks for itself.

It is my opinion that a publication is obligated to evaluate its audience's needs and then cater the majority of the publication to that target audience. The Amiga audience constitutes a fraction of the MS-DOS and Macintosh audience. Amiga users simply fail to realize that their machines are not a force in the industry. They think crying about it will make the Amiga sound more popular than it really is. If anything needs to be done, Commodore needs to do it, and given Commodore's history, I seriously doubt it.

If any Amiga user reads this as "Amiga bashing," he is very much mistaken. His attitude would be typical of Amiga users who don't accept the truth and feel insulted as a result, like Mr. Rohrl. I am simply pointing out the cold hard facts. The Amiga may be good for a few people, but not for the vast majority of computer users given its serious disadvantages. Major industry publications realize this and adjust their content accordingly, to meet the needs of the majority of their readers.

I will say one thing for the Amiga, though. It's one hell of a game machine, something the Mac and PC are not very good at. If Commodore ever comes out with a dedicated game system based on Amiga technology at a low cost ($200 or less), I would run out and buy one.

Sonny Shrivastava
Danville

High Tech Centers For Disabled Imperiled

The California Community Colleges have participated in an Establishment grant to fund High Tech Centers to allow the disabled to have access to adaptive computer technology. The High Tech Centers are providing instruction, guidance, training and support in the use of state-of-the-art adapted computer technology. Access to adapted computer technology will allow most disabled students to fully participate in courses or career paths in which computers play an integral part, and avail themselves of the special benefits provided by computer access to students in general. Skills learned or strengthened in the High Tech Center are put to use in mainstream classes.

How many businesses and consumers do you think will buy a computer they have to wear sunglasses in order to use?

There are 51 High Tech Centers serving six thousand disabled students in California. The funding stops June 30, 1990; many of the colleges are having difficulty transferring the staffing of those centers to college positions. The low student-instructor ratio of these classes does not make the self-supporting within the college funding guidelines.

Writing a letter to your local Assemblyperson and State Senator can help. Request that they voice your concerns about the program to Governor Deukmejian and to the people on the Senate and Assembly subcommittees. Assemblyman Robert Campbell chairs Subcommittee #2 on Education, whose members include Assembly members Tom Hannigan, Elihu Harris, Bill Jones, Pat Nolan, Jackie Speier, and Cathie Wright. State Senator Nicholas Petris chairs Subcommittee #1 on Education, which also includes Senators Diane Watson and Rebecca Morgan. Other key legislators (particularly because they are Republican friends of the Governor) are Senators William Craven, Ken Maddy, John Seymour, and Marian Bergeson.

Letters to all these people can be addressed to them at the State Capitol, Sacramento, CA 95814. When you write your letter, be sure to ask for augmentation or a reallocation of current community college funding.

If you don't know who your local representative is, call Helene Maxwell (415/436-2582) or Dee Konczal (805/654-6400 ext. 1243). For more information about the High Tech Centers, call me at (408)223-0619.

Linda Gibson
Evergreen Valley College
San Jose

Perstor Responds To User Problem

This letter is in response to a letter written by Jeff

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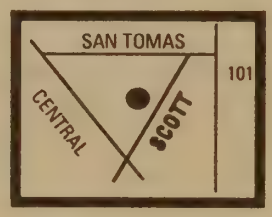

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LETTERS

Sampson entitled "Another Side of Perstor" published recently in *MicroTimes*. In his letter, Mr. Sampson tells of the problems he encountered installing the Perstor controller. We don't like to lose a customer, even if he jumps to the wrong conclusion, and we would like to address several issues he brings up.

He said that an installation instruction (for modifying the setup to indicate that no hard disks are installed) was not included in our documentation. In fact, this step is on page four of our manual.

He then wrote that he ran performance tests on the Perstor controller and compared it to an MFM 1:1 controller. The Perstor controllers will deliver performance equal to or greater than any 1:1 controller when measured in a dynamic operating environment. The Perstor controllers are relatively fast controllers, having a 9Mbits per second data rate, compared to 7.5Mbits for RLL boards and 5Mbits for MFM boards.

He noted that he obtained an RLL controller for his drive, yet it is inadvisable to use RLL boards with MFM drives because RLL encoding operates above the MFM drive specification. Because ADRT works within the MFM drive specification, Perstor controllers work with both MFM and RLL drives. Mr. Sampson also wrote that Perstor uses an enhanced RLL variation encoding. ADRT is actually a modified 3370 DK code structure that differs greatly from ERLL.

Finally, Mr. Sampson noted that "Neither of the cards will work with the program I use, Spinrite," and that "Version 2 will operate with the Perstor but not the DTC cards." We have tested our boards with Spinrite, and as long as the Perstor controller has the latest revision BIOS (1.05 on the 8XT model, 1.07 on the 8AT model, and 3.03 on the 16 bit model), no problems will occur with this program.

Woody Liswood, who originally reviewed the Perstor product, did not have these problems. When the boards are measured on a scale of disk drive capacity/performance, they are one of the best overall values available.

Christi Ferris
Communications Manager
Perstor Systems Inc.
Tempe, AZ

Czech Entrepreneur Seeks Strategic Partners

We are now free, after such a long time. And allowed to make small businesses. I am a part-time businessman, re-inking ribbons in cartridges for printers, like Epsons, Centronics, Citizens, Stars, etc. I would be very much obliged to readers of this magazine if they would help me by sending their already used cartridges with or without ribbons. Everyone gets a free gift (unused postage set of commemorative Czech stamps, or a book). Thank you.

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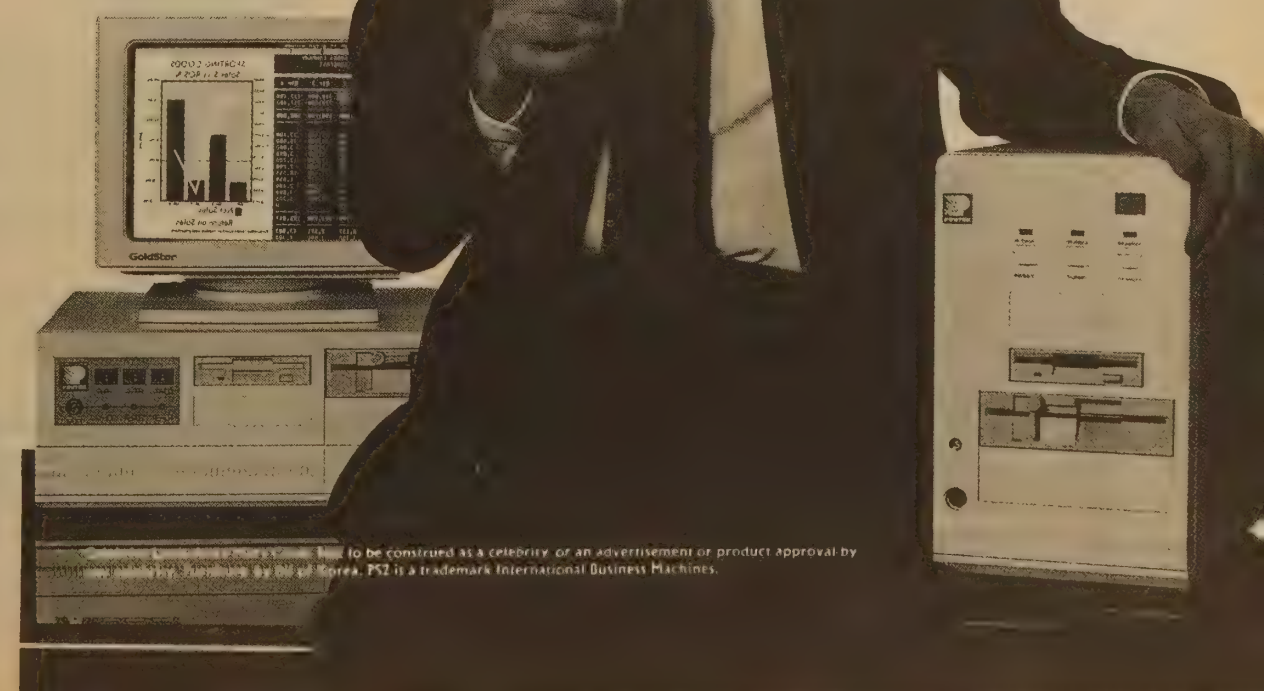

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w/80 MB Hard Disk (28 ms/MFM)	$1,049	$1,149	$1,199	$1,274	$1,549	$1,649	$1,799
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w/65 MB Hard Disk (25 ms/RLL)	$1,199	$1,299	$1,349	$1,424	$1,699	$1,799	$1,949
w/80 MB Hard Disk (28 ms/MFM)	$1,369	$1,469	$1,519	$1,594	$1,869	$1,969	$2,119
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w/65 MB Hard Disk (25 ms/RLL)	$1,399	$1,499	$1,549	$1,624	$1,899	$1,999	$2,149
w/80 MB Hard Disk (28 ms/MFM)	$1,569	$1,669	$1,719	$1,794	$2,069	$2,169	$2,319
w/100 MB Hard Disk (17 ms/ESDI)	$2,099	$2,199	$2,249	$2,324	$2,599	$2,699	$2,849
w/150 MB Hard Disk (17 ms/ESDI)	$2,299	$2,399	$2,449	$2,524	$2,799	$2,899	$3,049
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w/80 MB Hard Disk (28 ms/MFM)	$2,069	$2,169	$2,219	$2,294	$2,569	$2,669	$2,819
w/100 MB Hard Disk (17 ms/ESDI)	$2,599	$2,699	$2,749	$2,824	$3,099	$3,199	$3,349
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w/65 MB Hard Disk (25 ms/RLL)	$2,399	$2,499	$2,549	$2,624	$2,899	$2,999	$3,149
w/80 MB Hard Disk (28 ms/MFM)	$2,569	$2,669	$2,719	$2,794	$3,069	$3,169	$3,319
w/100 MB Hard Disk (17 ms/ESDI)	$3,099	$3,199	$3,249	$3,324	$3,599	$3,699	$3,849
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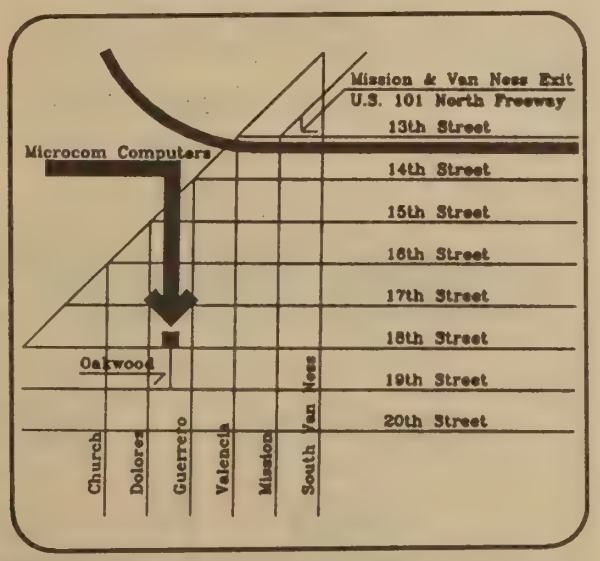

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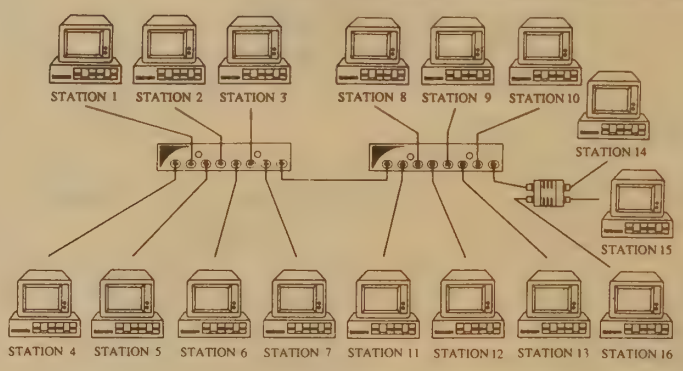

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April 19 Founding A Software Company—How To Do It Right Seminar. Palo Alto. Software Entrepreneurs' Forum. Call: Barbara Cass, (415)845-7219.

April 19 Microsoft Project Course. San Francisco. Training Works. Call: (415)243-0100.

April 19 Pen Interface And Handwriting Recognition Conference. Santa Clara. Grid Systems Corporation. Call: Leilani Ribardo, (415)656–4700.

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April 20 QMS Ultrascript Breakfast Seminar. Sunnyvale. M & P Computer. Call: Donna, (408)738-8578.

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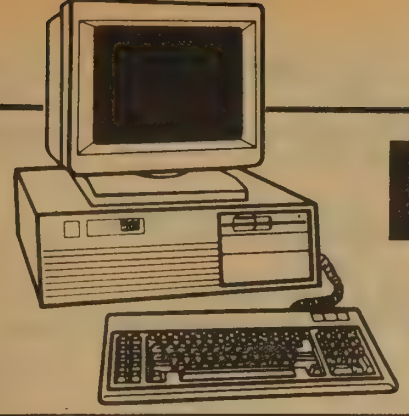

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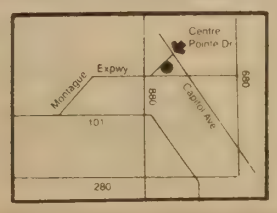

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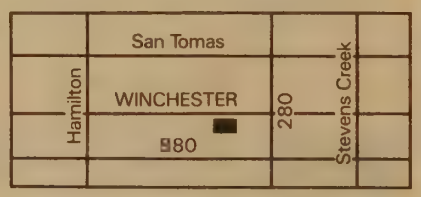

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April 20–21 386 Power Expo/Windows Spring '90 Conference. Techmart. CM Ventures. Call: (415)601-5000.

April 20 Paradox Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

April 21–22 AutoLISP Level II Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

Spring 1990 Management Of Publications And Documentation Certification Program. Techmart. University of California Extension, Santa Cruz. Call: (408)427-6600.

April 21 WordPerfect 5.0 Course. San Francisco. Training Works. Call: (415)243-0100.

April 21 Lotus 1-2-3 Course. San Francisco. Training Works. Call: (415)243-0100.

April 21 Computer Show & Sale. Oakland. East-West Computer Shows. Call: (415)388-8893.

April 21 Shop Till Ya Drop Computer Swap. Oakland. Richard James. Call: 1-800-433-7469.

April 22 Computer Show & Sale. Techmart. East-West Computer Shows. Call: (415)388-8893.

April 23–25 3D Features/Release 10, Level III Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

April 23–24 Using UNIX Power Utilities Class. Berkeley. Lurnix. Call: (415)849-4478.

April 23 Hard Disk Management Course. San Francisco. Training Works. Call: (415)243-0100.

April 23 dBASE III+ Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

April 24 Lotus 1-2-3 Release 2.2 Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

April 24 Novell Networks Breakfast Seminar. Sunnyvale. M & P Computer. Call: Donna, (408)738-8578.

April 24 Interactive Multimedia Presentation Techniques Workshop. Palo Alto. Stanford University. Call: William Merz, (415)723-0544.

April 24 WordPerfect 5.0 Session 3 Course. San Francisco. Training Works. Call: (415)243-0100.

April 25 Macintosh Excel Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters. (415)291-8585.

April 25–26 Shell Programming Class. Berkeley. Lurnix. Call: (415)849-4478.

April 25 Advanced DOS Course. San Francisco. Training Works. Call: (415)243-0100.

April 25 Lotus 1-2-3 Database Course. San Francisco. Training Works. Call: (415)243-0100.

April 25 Digital Color Pre-Press On The Macintosh Workshop. Palo Alto. Stanford University. Call: William Merz, (415)723-0544.

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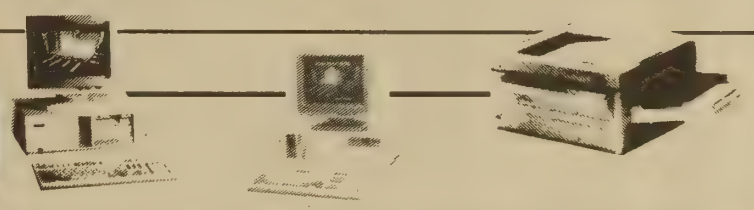

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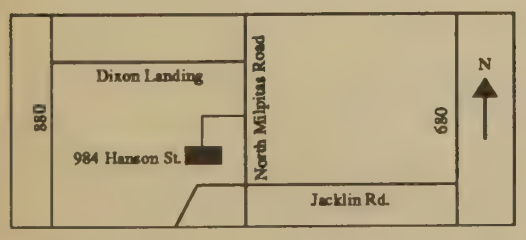

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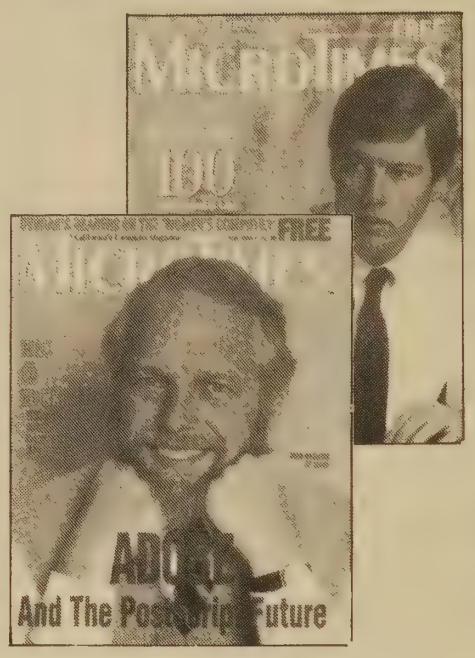

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April 25 Lotus 1-2-3 (2.X) Database Course. San Francisco. Training Works. Call: (415)243-0100.

April 26 How Are Object Languages Implemented? Lecture. San Francisco. University of San Francisco. Call: (415)666-6530.

April 26 Excel For The Macintosh Course. San Francisco. Computer Alliance. Call: (415)771-1671.

April 26 Introduction To Adobe Illustrator 88 Course. San Francisco. Computer Alliance. Call: (415)771-1671.

April 26 Marketing SIG. Palo Alto. Software Entrepreneurs' Forum. Call: (415)968-8888.

April 26 Xerox Ventura Publisher 2.0/Formbase Breakfast Seminar. Sunnyvale. M & P Computer. Call: Donna, (408)738-8578.

April 26 WordPerfect 5.0 Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

April 27 WordPerfect 5.0 Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

April 28 Shop Till Ya Drop Computer Swap. San Francisco. Richard James. Call: 1-800-433-7469.

April 29–May 2 International Paradox Users Conference. Monterey. Borland International. Call: (408)439-1622.

April 29 Computer Show & Sale. Hayward. East-West Computer Shows. Call: (415)388-8893.

April 30–May 1 Concepts In System Operation Class. Berkeley. Lurnix. Call: (415)849-4478.

April 30 Intro To PC And DOS Course. San Francisco. Training Works. Call: (415)243-0100.

April 30 Microsoft Word Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

May 1–4 Image Processing And Machine Vision Class. San Francisco. Integrated Computer Systems. Call: 1-800-421-8166.

May 1, 3, 8, & 10 A/E/C/-Architectural Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 1 Microsoft Excel Macros Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 1–4 Image Processing & Machine Vision Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

May 1 WordPerfect 5.0 Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 1 & 8 Pagemaker Course. San Francisco. Training Works. Call: (415)243-0100.

May 2–3 System Administration. Berkeley. Lurnix. Call: 1-800-433-9338.

May 2 Producing Your Newsletter On The Mac Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 2 Optical Character Recognition Breakfast Seminar. Sunnyvale. M & P Computer. Call: Donna, (408)738-8578.

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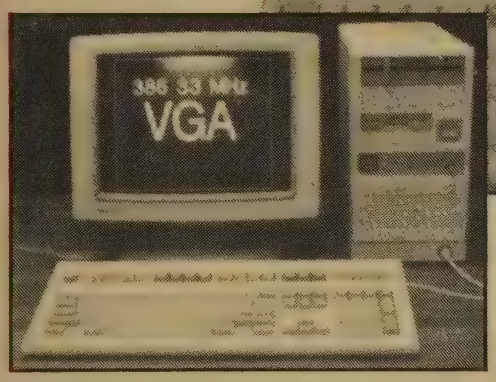

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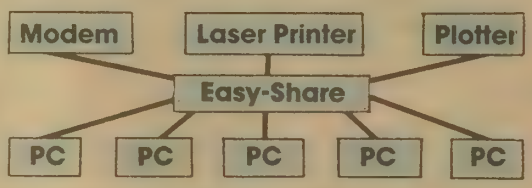

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CALENDAR OF EVENTS *continued*

May 2 Lotus 1-2-3 Release 2.01 Macros Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 2 Macintosh Techniques Course. San Francisco. Training Works. Call: (415)243-0100.

May 2 dBASE III+ Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 3 Beginning Filemaker II Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 3 Personal Computer Hardware Maintenance Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 3 Microsoft Excel On The Macintosh Level 2 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 3 Microsoft Word (For The Macintosh) Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 4 Computer Design Course Program. San Francisco. Platt College. Call: (415)495-4000.

May 4 Using Lotus 1-2-3 Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 4 Lotus Release 2.2 Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 5 Introduction To Graphics Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 6–10 Mass Storage Systems Symposium. Monterey. IEEE. Call: Bernard T. O'Lear, (303)497-1268.

May 6–10 Research In Security & Privacy Symposium. Oakland. IEEE. Call: Deborah Downs, (213)336-6337.

May 6 East-West Computer Show & Sale. Santa Rosa. East-West Shows. Call: (415)388-8893.

May 7–9 The Three Rs Of Software Automation: Re-engineering, Repositories, Reusability. San Francisco. Extended Intelligence, Inc. Call: Dr. Carma McClure, (312)372-7762.

May 7–8 Fundamentals Of UNIX Class. Berkeley. Lurnix. Call: (415)849-4478.

May 7 Producing Your Newsletter On The Mac Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 7 Intermediate Macintosh Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 7 MS DOS For CAD, Level I Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 7 WordPerfect 5.1 Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 7 Lotus 1-2-3 (2.X) Beginning Course. San Francisco. Training Works. Call: (415)243-0100.

May 8 IBM New Products Presentation. San Francisco. IICS. Call: (408)866-7941.

May 8–10 Systems Design & Networks Conference. Santa Clara. SDNC. Call: Ken Majithia, (408)997-1031.

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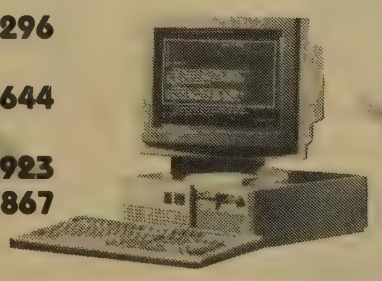

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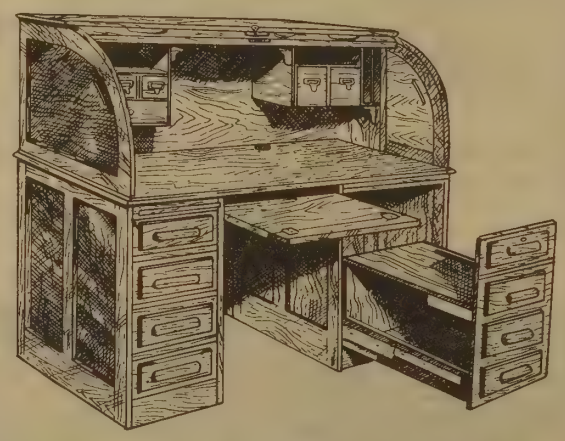

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May 8 WordPerfect 5.0 Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 8 Lotus 1-2-3 (2.X) Beginning Macros Course. San Francisco. Training Works. Call: (415)243-0100.

May 9–11 Color Hard Copy: Conference And Exposition. Monterey. BIS CAP International. Call: Kathy Greeley, (617) 893-9130.

May 9–10 Intermediate UNIX Class. Berkeley. Lurnix. Call: (415)849-4478.

May 9 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Suzette, (415)864-6770.

May 9 UNIX Business Tips Seminar. Sunnyvale. SVNet. Call: Ralph Baker, (408)986-8840.

May 9 Introduction To Adobe Illustrator 88 Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 9 Microsoft Word, Part I Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 9–11 NEXPERT User Conference. San Francisco. Neuron Data. Call: (415)321-4488.

May 9 Microsoft Word For Windows Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 9 Lotus 1-2-3 2.0–3.0 Upgrade Course. San Francisco. Training Works. Call: (415)243-0100.

May 10 The Effects Of Computer Models On Global Warming Regional Environmental Policy In East Africa, Speaker. Oakland. Mills College. Call: (415)430-2144.

May 10 Basic Macintosh 2, Word Proc. & Graphics Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 10 Paradox Level I Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 10 Powerpoint Course. San Francisco. Training Works. Call: (415)243-0100.

May 11 Filemaker Course. San Francisco. Training Works. Call: (415)243-0100.

May 12 De Anza College Computer Mart. Cupertino. De Anza College. Call: (408)864-8350.

May 12 East-West Computer Show & Sale. Sacramento. East-West Shows. Call: (415)388-8893.

May 12 Shop Till Ya Drop Computer Swap. Alameda. Richard James. Call: 1-800-433-7469.

May 14 Using X Windows. Berkeley. Lurnix. Call: 1-800-433-9338.

May 14 How To Build Your CAD System Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 14 Microsoft Word Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

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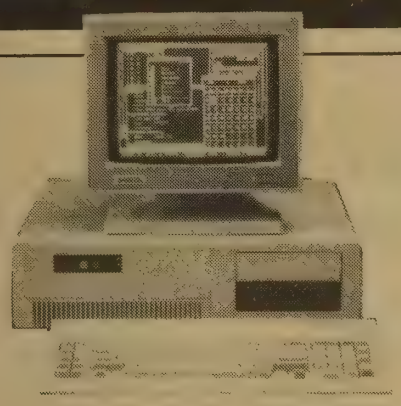

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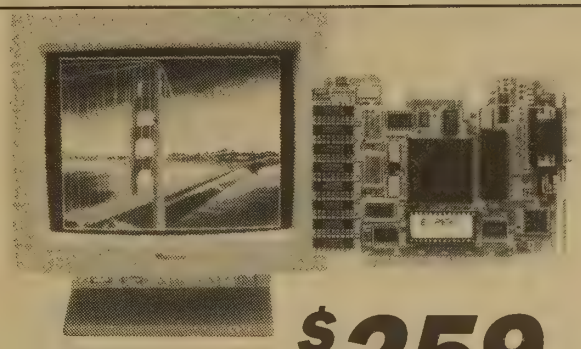

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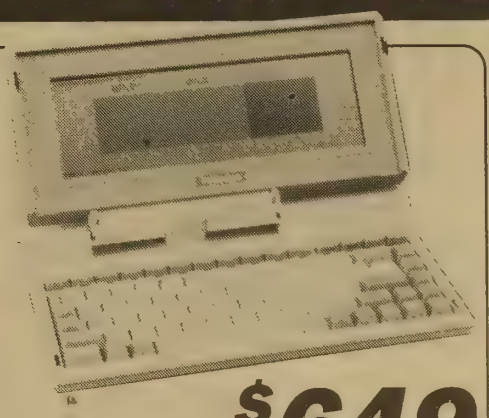

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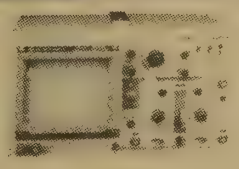

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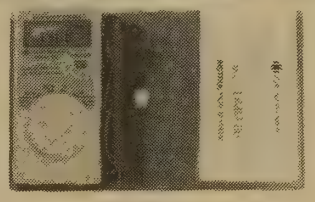

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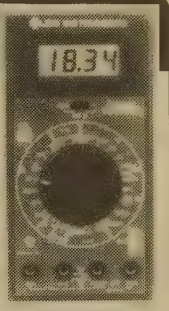

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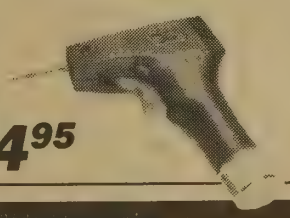

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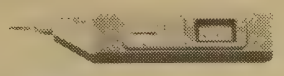

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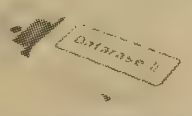

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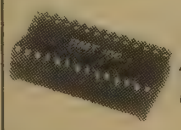

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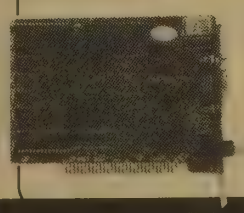

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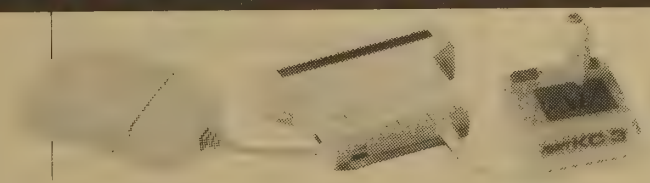

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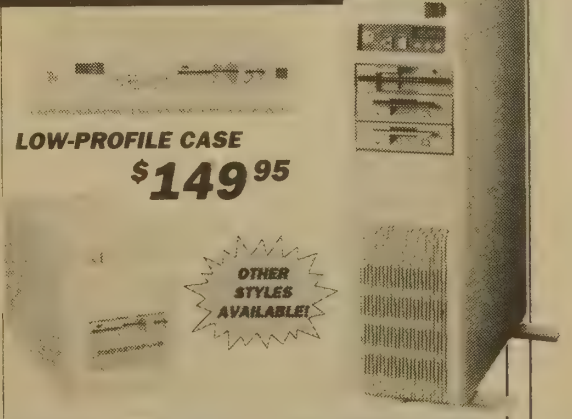

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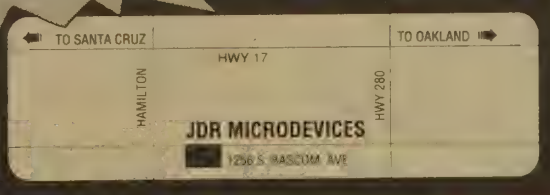

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May 14 Microsoft Excel Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 14 Lotus 1-2-3 (2.X) Graphics Course. San Francisco. Training Works. Call: (415)243-0100.

May 15 Apple II/Mac Computer Swap. Sacramento. Call: (916)752-0228.

May 15–16 X Windows Programming I Course. Berkeley. Lurnix. Call: 1-800-433-9338.

May 15 Introduction To Hypercard Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 15–17 Mechanical Design & Drafting Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 15 Lotus 1-2-3 Release 3.0 Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 15 Paradox Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

May 16 Microsoft Word, Part II Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 16 PageMaker Part I Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 16 Lotus 1-2-3 (2.X) Beginning Course. San Francisco. Training Works. Call: (415)243-0100.

May 17–18 X Windows Programming II Course. Berkeley. Lurnix. Call: 1-800-433-9338.

May 17 & 18 Microsoft C Programming Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 17 Financing Your Software Company Dinner Meeting. Palo Alto. Software Entrepreneurs' Forum. Call: Barbara Class, (415)854-7219.

May 17 Lotus 1-2-3 (2.X) Database Course. San Francisco. Training Works. Call: (415)243-0100.

May 18–20 Animator Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 18 WordPerfect On The Macintosh Level 1 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 18 Microsoft Word Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

May 19 Excel For The Macintosh Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 19 Hypercard II Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 19 Shop Till Ya Drop Computer Swap. Santa Clara. Richard James. Call: 1-800-433-7469.

May 19 Lotus 1-2-3 Advanced Spreadsheets Course. San Francisco. Training Works. Call: (415)243-0100.

May 21 Microsoft Word For Windows Presentation. San Francisco. San Francisco PC Users Group. Call: (415)221-9166.

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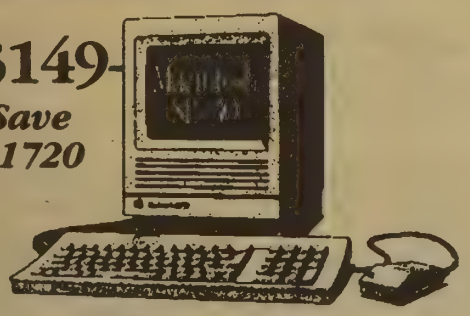

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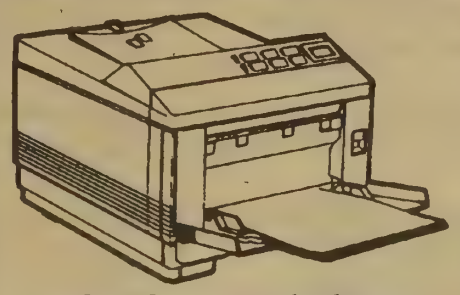

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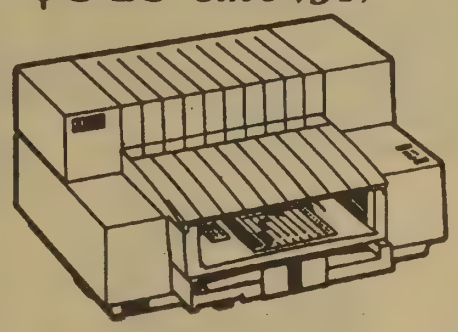

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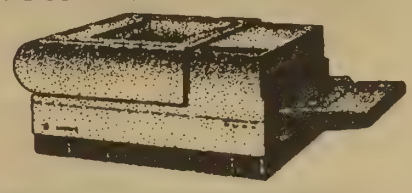

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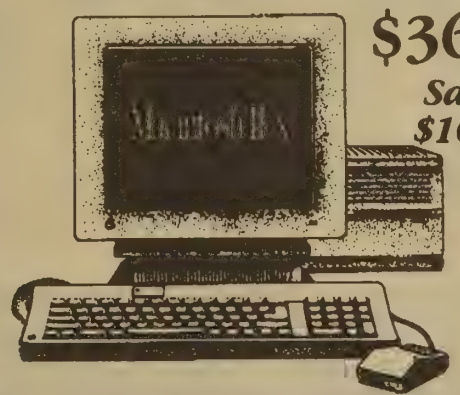

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May 21 MS DOS For CAD Level II Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 21–22 Using Network Course. Berkeley. Lurnix. Call: 1-800-433-9338.

May 21 & 22 Word Perfect 5.1 Level 2 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 21 Lotus 1-2-3 Release 2.2 Level 2 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 21 dBASE III+ Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

May 22–25 Distributed Databases: Design, Implementation & Management Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421–8166.

May 22–25 Optimizing/Customizing AutoCAD, Level II Seminar. San Francisco. San Francisco State University Extended Education. Call: (415)338-1205.

May 22–25 Project Management: Skills For Success Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

May 22 WordPerfect 5.0 Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

May 22 Lotus 1-2-3 (2.X) Advanced Spreadsheets Course. San Francisco. Training Works. Call: (415)243-0100.

May 23–24 Network System Administration. Berkeley. Lurnix. Call: 1-800-433-9338.

May 23 Microsoft Word Part I Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 23–26 Collaboration In The Global 90s Conference. San Francisco. Electronic Networking Association. Call: (415)886-2663.

May 23 Desktop Publishing With WordPerfect 5.0 Course. San Francisco. Training Works. Call: (415)243-0100.

May 23 & 24 Lotus Advanced Macros (2.X) Course. San Francisco. Training Works. Call: (415)243-0100.

May 24 Microsoft Word Part II Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 24 Microsoft Word On The Macintosh Level 2 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 24 dBASE III+ Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 24 & 25 Microsoft Word For Windows Level 2 Class. San Francisco. PC Etcetera. Call: Lee Van Sluyters, (415)291-8585.

May 25 & June 1 Ventura Course. San Francisco. Training Works. Call: (415)243-0100.

May 25 Lotus 1-2-3 (2.X) Beginning Course. San Francisco. Training Works. Call: (415)243-0100.

May 26 Shop Till Ya Drop Computer Swap. San Francisco. Richard James. Call: 1-800-433-7469.

May 27 East-West Computer Show & Sale. Techmart. East-West Shows. Call: (415)388-8893.

May 29–30 Concepts In System Operation Class. Berkeley. Lurnix. Call: (415)849-4478.

May 30 Intermediate Macintosh Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 30 Paradox Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

May 31–June 1 System Administration. Berkeley. Lurnix. Call: 1-800-433-9338.

May 31 PageMaker Part II Course. San Francisco. Computer Alliance. Call: (415)771-1671.

May 31 WordPerfect 5.0 Session 3 Course. San Francisco. Training Works. Call: (415)243-0100.

May 31 Paradox Session 3 Course. San Francisco. Training Works. Call: (415)243-0100.

June 1 Microsoft Works On The Macintosh Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 1 Multimate Advantage II Session I Course. San Francisco. Training Works. Call: (415)243-0100.

June 2–4 ShowBiz Expo. Los Angeles. Live Time. Call: (213)668-1811.

June 3–7 Infocom '90 Conference. San Francisco. IEEE. Call: (202)371-1013.

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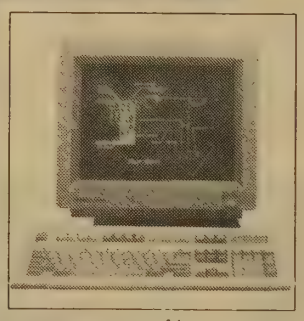

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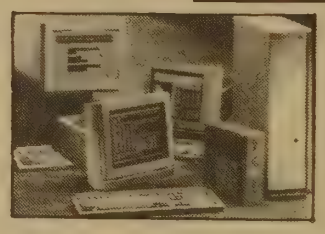

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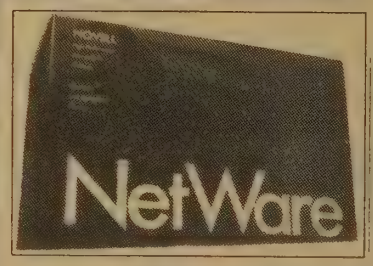

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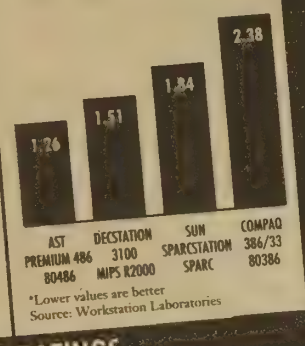

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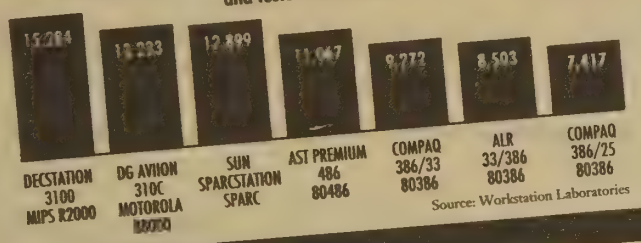

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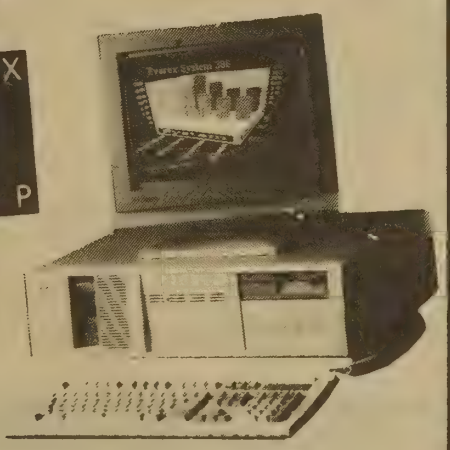

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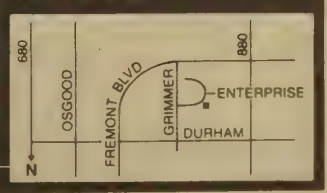

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June 4–5 Fundamentals Of UNIX Class. Berkeley. Lurnix. Call: (415)849-4478.

June 4–6 SCOOP East '90: Object-Oriented Programming Seminars And Conference. Boston. Wang Institute. Call: (508)649-9731.

June 4 Microsoft Word On The Macintosh Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 4 Macintosh Techniques Course. San Francisco. Training Works. Call: (415)243-0100.

June 4 dBASE III+ Programming Course. San Francisco. Training Works. Call: (415)243-0100.

June 5 Introduction To The Macintosh Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 5–8 C Advanced Programming & Data Structures Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

June 5 Macintosh Hypercard Course. San Francisco. Training Works. Call: (415)243-0100.

June 6–7 Intermediate UNIX Class. Berkeley. Lurnix. Call: (415)849-4478.

June 6 MacDraw II On The Macintosh Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 6 Microsoft Word (For The Macintosh) Session 1 Course. San Francisco. Training Works. Call: (415)243-0100.

June 6 Microsoft Excel Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

June 7 Aldus FreeHand Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 7 How To Automate Your Business Accounting System Seminar. San Francisco. J.C. Lukrich & Co. Call: Suzette, (415)864-6770.

June 7 & 14 Pagemaker Course. San Francisco. Training Works. Call: (415)243-0100.

June 8 Hypercard Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 8 Lotus 1-2-3 (2.X) Beginning Macros Course. San Francisco. Training Works. Call: (415)243-0100.

June 9 Shop Till Ya Drop Computer Swap. Santa Clara. Richard James. Call: 1-800-433-7469.

June 9 Hard Disk DOS Course. San Francisco. Training Works. Call: (415)243-0100.

June 11 Using X Windows Class. Berkeley. Lurnix. Call: 1-800-433-9338.

June 11 Adobe Illustrator Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

June 11 Microsoft Word (For The Macintosh) Session 2 Course. San Francisco. Training Works. Call: (415)243-0100.

June 12–15 Software Requirements & Design Specifications Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

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June 13 Symphony Course. San Francisco. Training Works. Call: (415)243-0100.

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June 14 WordPerfect On The Macintosh Class. San Ramon. Adelphi Corporation. Call: Tom Phipps, (415)275-1188.

continued on page 180

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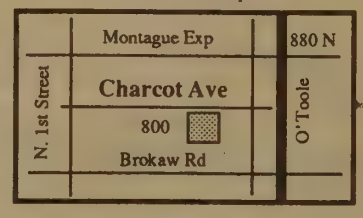

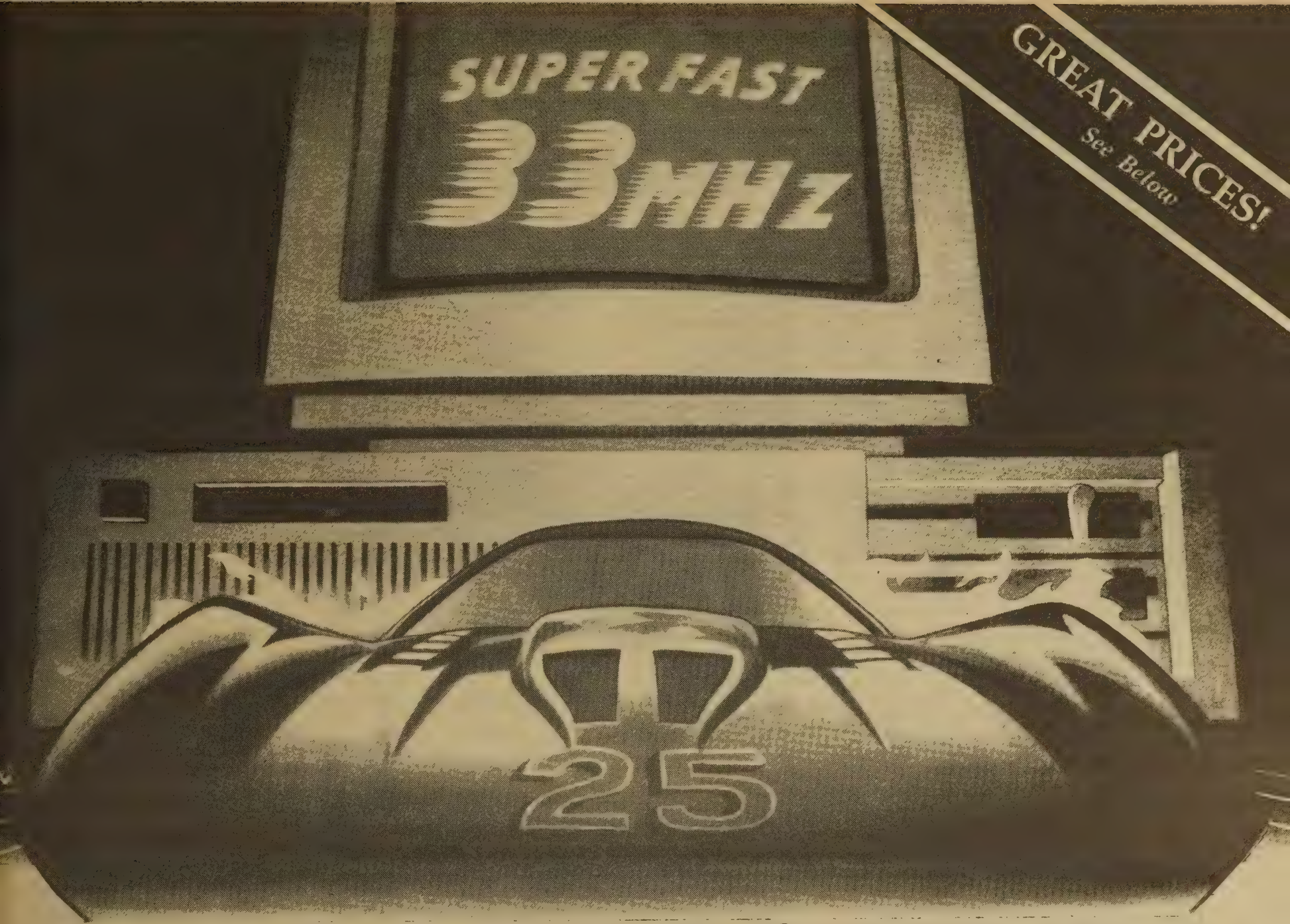

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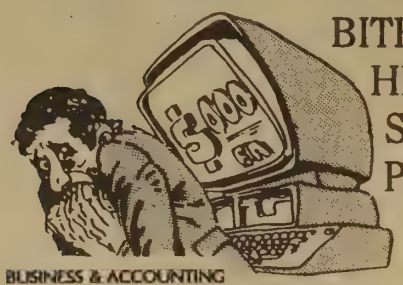

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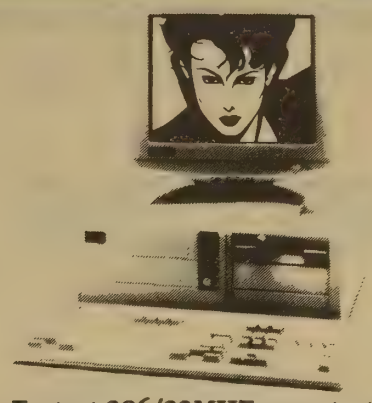

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BY PAUL HOFFMAN

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Intel Runs Short Of 80386 CPU Chips

Having a monopoly in a market rarely makes you popular. Intel is beginning to discover that its monopoly position in the MS-DOS compatible CPU market can get people angry.

In the last few months, Intel has become unable to ship as many 80386 CPUs as have been demanded by the marketplace. So far, major computer manufacturers who deal directly with Intel have been unaffected by the shortfall, but smaller computer companies have seen the costs on the chips skyrocket.

Intel ascribes the shortfall to higher-than-expected demand, a euphemism for bad planning. Over the last year, Intel has made a concerted effort to get people to switch from 80286-based systems to 80386-based systems, and they must have had some idea of the results of the campaign. Many security analysts assume that the shortage is a good method for Intel to raise prices, or at least not drop them as quickly as they were expected to.

The spot price for 80386 CPUs has doubled in the last three months due to the shortage. Fewer chips are appearing in the market due to Intel's allocating them to system manufacturers before they sell them to chip dealers. Although it is unknown how many chips go to each market, Intel has always said that long-term clients get priority, both on new chips and on chips in short supply.

The companies being hurt the most by the shortage are the small clone sellers. As you can see from perusing the pages of *MicroTimes*, most of these companies live and die on price. Many stores sell fewer than a dozen 80386-based systems a month, although some can sell more than ten times that many if they are large enough and have enough locations. As you can also see, the price difference between the no-name clones and the name-brand 80386 systems is considerable. By squeezing out the low end of the market, Intel is inherently raising the prices on 80386-based systems across the board.

This loss of the low end will, of course, hurt end users quickly. Many companies have been putting off buying an 80386 system until Windows 3 comes out later this year to be sure that any systems that they buy work with Windows 3 immediately. Since Windows is notoriously sensitive to hardware, it could be disastrous to buy a system that may not work with the new version. However, Intel's move may make the wait very costly, especially if the larger companies raise their prices in response to lower competition from below. An even scarier thought is that some large companies might have to raise their prices if Intel cannot make all of its expected deliveries to them. Although none of the major players has said anything about the shortage, if they start getting too few chips in the next few months the certain result will be higher prices.

Intel is preparing for an unfortunate side-effect from the shortage, namely that many people will buy high-end 80286 systems instead of the much more expensive 80386 systems. This, of course, goes directly against what Intel has been trying to persuade people to do for the last year. Every store selling 80386 systems also sells 80286 systems. Intel cannot expect those stores to turn away customers just because their high end is too expensive. Since all major software runs just as well (although slower) on 80286 systems, users will turn to them until the 80386 market drops back to reasonable levels.

Intel ascribes the shortfall to higher-than-expected demand, a euphemism for bad planning.

Small vendors are responding to the problem by hoarding whatever 80386 chips they can get their hands on. Some vendors are also banding together so that they can be large enough to deal directly with Intel instead of having to buy the CPUs from resellers. This is, in effect, turning them into chip wholesalers, one of the most risky businesses within the PC community. However, without chips, these small vendors could easily go out of business.

The shortage also brings up another issue that Intel would like people to forget: second-sourcing. Intel is the only source for 80386 chips. Most other popular CPUs are available from more than one company. If Intel had allowed another company such as AMD to manufacture and sell 80386es, this shortage would never have come up. The danger of single-source chips goes beyond price: if Intel's manufacturing plant was put out of commission by a natural disaster like last year's earthquake, there would simply be no 80386es at all. Of course, Intel has a monopoly on the CPUs and can hold out on second-sourcing as long as it wants. However, if the situation turns significantly worse, there will certainly be an outcry for more freedom in the marketplace.

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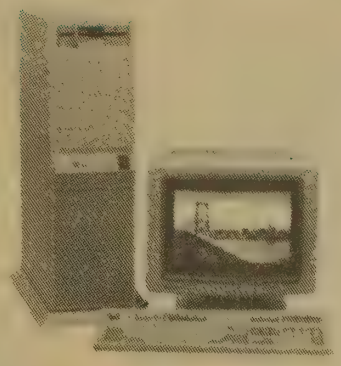
- 2 Serial, 1 Parallel, 1 Game Port
- 250 W Power Supply
- Vertical Case Holds 6 Drives
- 101 Key Keyboard
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR DOS, Concurrent DOS 386



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VERTICAL 386-33

VGA 72 MB HARD DISK COMPLETE SYSTEM

- Landmark = 58.5 SI = 45.9
- 1 MB RAM Expandable to 16 MB On Board
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- 72 MB ESDI Hard Disk
- 1.2 or 1.44 MB Floppy Disk
- 1:1 Interleave Hard/Floppy Disk
- Socket for 80387 Socket & Weitek Math Co-Processor
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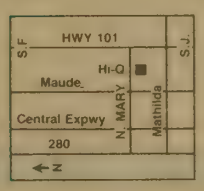

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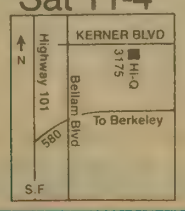

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LANDMARK = 43 SI = 31

64K CACHE with 66 MB HARD DISK

- 1 MB RAM On Board (384K Shadow RAM Included)
- 66 MB 23ms Hard Disk
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Disk ESDI
- 64K Fast Cache RAM
- Socket for 80387 Socket & Weitek Math Co-Processor
- 1 × 32 Bit, 5 × 16 Bit, 2 × 8 Bit Slot
- 2 Serial, 1 Parallel, 1 Game Port
- Real Time Clock/CMOS Memory w/Battery Back-up
- 250 W Power Supply & Vertical Case Holds 6 Drives
- 101 Key MaxiSwitch Keyboard
- Supports – MSDOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386

Monitor & Card Not Included

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Landmark = 34.5 SI = 29.5

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- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Disk Controller
- 80387 Socket
- 1x32 Bit, 5x16 Bit, 2x8 Bit Slot
- 2 Serial, 1 Parallel, 1 Game Port
- Real Time Clock/CMOS Memory w/Battery Back-up
- 230W Power Supply & Quality Case Holds 5 Drives
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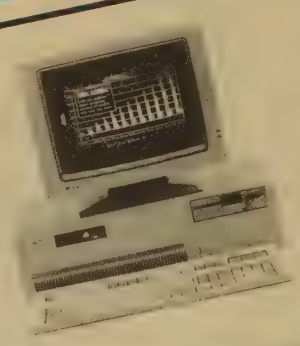

Hi-Q 20 MHz 386 SYSTEM

Landmark = 25 SI = 23

- 1 MB RAM Expandable to 8 MB On-board
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Disk Controller
- 80387 Socket
- 2 Serial, 1 Parallel, 1 Game Port
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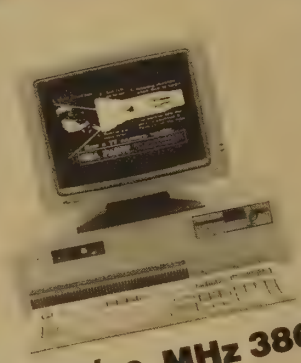

Hi-Q 16/20 MHz 386-SX

Landmark = 19.5 SI = 18

- 1 MB RAM Expandable to 8 MB On-board
- 1.2 or 1.44 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Disk Controller
- 80387 Socket
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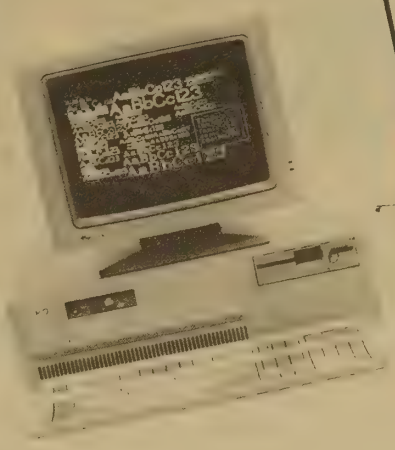
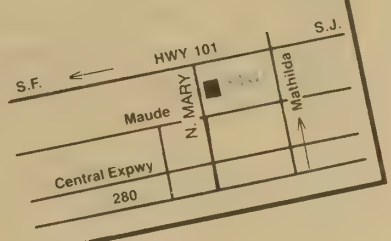


- Landmark = 41 SI = 31.6
- 1 MB Expandable To 16 MB On Board
- Intel Cache Controller w/64K Cache RAM
- Socket For 80387 & Weitek Math Co-Processor
- 2x32 Bit, 5x16 Bit, 1x8 Bit Slots
- Real Time Clock/CMOS Memory w/Battery Back-Up
- 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave Hard/Floppy Drive
- 2 Serial, 1 Parallel, 1 Game Port
- 230W Power Supply & Quality Case Holds 5 Drives
- 101 Key MaxiSwitch Keyboard
- Technical Version 4.0 & I/O Cache Utility
- Supports MS DOS, OS/2, PC-MOS/386, UNIX, XENIX, DR-DOS, Concurrent DOS 386



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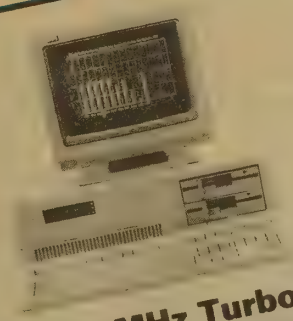

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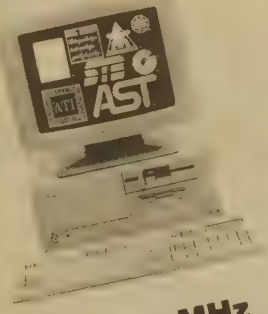

Hi-Q 12 MHz 286-AT SYSTEM

Landmark = 15.9 SI = 13.4

- 640K RAM Expandable to 4 MB On-board
- 1.2 or 1.44 MB Floppy Drive
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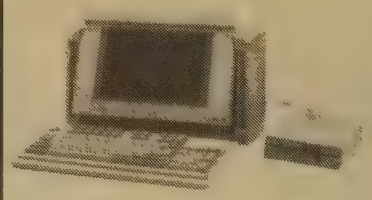

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- CGA/MGA/EGA 640x400, 4 Gray Scale
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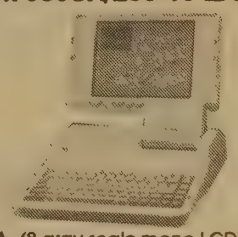

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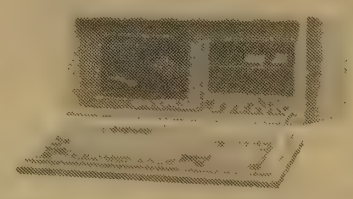

- 80386SX 16/8 Mhz Norton SI 17/6
- 1 MB of RAM expandable to 16 MB
- 1.2 MB Floppy Drive
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- Dual Floppy Hard Controller
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- 2 Ser port, 1 par port, 1 game port
- Dual Floppy/Dual Hard Controller
- Monochrome Graphic Card
- 12" TTL Monitor
- 101 Enhanced Keyboard
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MICROTIMES

NEWS AND ANALYSIS

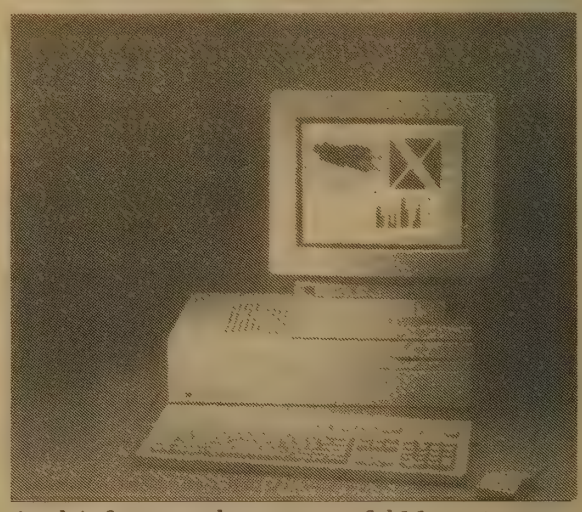
Apple Keeps Its Name In The Newspaper

The last few months have been very busy at Apple. Even standard newspapers have had lots of Apple news almost every week.

Of course, not all this news has been good. Apple's fortunes and woes have become much more interesting to the business community as more Macintoshes are sold into large companies. Apple has also gained respect from many corporations who feel that they are much better able to predict how system software changes on the Mac will affect their work than similar changes on PCs. The recent Apple news:

• Apple cut the prices on the Mac SE line and on the LaserWriter II by 10% to 17%. The net effect was to make the SE family more affordable to students and other entry-level buyers; a market that Apple has courted heavily since the Mac first came out. The price reductions on the LaserWriter IINT and IINTX bring those printers closer to the prices of other PostScript printers, which have been seriously eroding Apple's dominance in the field over the last two years.

• Apple also cut the price on the CD SC CD-ROM player, in this case by 25%. They made this announcement at the CD-ROM conference in San Francisco in February. The new list price is $900,



Apple's fastest and most powerful Mac yet—the IIfx—arrived March 19

which is still quite high relative to the price of CD-ROM players for the PC. To its credit, Apple has pushed CD-ROM technology much further than companies in the PC market. Although everyone is now touting "multimedia" as the wave of the future, Apple began the rallying cry years ago. In addition, it is likely that many multimedia applications will appear first on the Macintosh due to the presence of graphics and sound in the Mac without having to add other hardware, as is required on the PC.

• The perpetual white-male-in-suit parade continued. Allan Loren resigned from the post of President of Apple USA. Loren was blamed for Apple's

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- 101 Keyboard
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(386-33 MHz SYSTEM - **CALL**)

386-25 MHz System

- Intel 25 MHz CPU
- 1 MB RAM on board
- Hard/Floppy Controller (1:1)
- Teac 1.2 MB or 1.44 MB Floppy Drive
- Serial, Parallel, Game Port
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- Intel 386-SX CPU
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- Hard/Floppy Controller (1:1)
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- 101 Keyboard
- Choice: Regular Baby Case or Small Tower Case

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- C&T (Neat) 20 MHz Chip Set
- EMS; LIM 4.0; Landmark=26
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- 1.2 Floppy Drive; HD/FD Controller
- 101 Keyboard
- Choice: Regular Baby Case or Small Tower Case

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- 512K RAM
- 1.2 MB or 1.44 MB Floppy Drive
- 1:1 Interleave HD/FD Controller
- Choice: Regular Case, Baby Case or Small Tower Case
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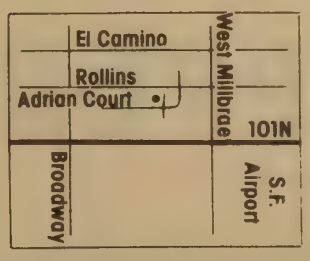

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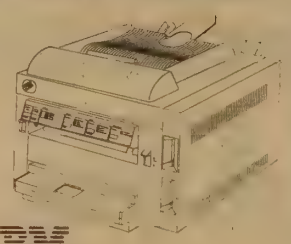

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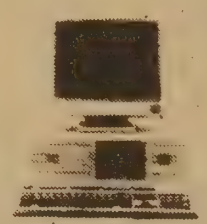

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NEWS AND ANALYSIS

slower-than-expected growth and lack of low-cost products and was clearly pushed out of office. Apple management created a new position, Chief Operating Officer, and gave it to Michael Spindler, previously president of the successful Apple Europe operation. At the same time, Apple took marketing and manufacturing away from Jean-Louis Gassee and put them under Spindler. After a polite wait of a few weeks, Gassee dropped the other shoe and resigned, apparently with Apple's good graces and a promise of good relations in the future. His inbox was immediately flooded with business plans from around the world. The moves gave CEO John Sculley more power and assured investors that Apple's "new" management would be more boring and staid in the future.

• Apple laid off at least 400 workers (3 percent of the company) in order to save money. They also significantly cut the number of contractors working on-site. In a gesture that is rare in Silicon Valley, Apple gave those laid off up to two months of paid time to look for other jobs and even set up a reemployment center to help them find other companies. It is widely expected that if Apple's earnings rise over the next two financial quarters, Apple will refill most of the positions.

•High speed (not low cost) hardware was the order of the day on March 19 when Apple announced many new products. The biggest announcement is the Mac IIfx. Apple's fastest and most feature-laden Mac to date. The IIfx has a 40 MHz 80386 CPU, making it faster than many dedicated UNIX systems. It comes with specialized I/O and memory processors that help boost its speed to twice that of the IIci. Of course, there's a cost for all of this: $8,969 for the lowest-cost configuration. Apple also introduced two video cards, one with a RISC processor to vastly speed up graphic display. The card is approximately ten times as fast for drawing shapes than standard video cards that rely on the Mac's CPU for displaying graphics. Apple also introduced two new standard display cards.

•Apple extended its warranty period from a meager 90 days to a full year. The company has been catching grief from business users for the short warranty, since the AppleCare extended warranty was much more expensive and less convenient than standard PC service contracts. The one-year warranty is retroactive to anyone who bought a Mac since January 1, 1990, and is applied to Macs all over the world.

Font Wars Heat Up: IBM Supports Adobe For Large Systems

An increasingly defensive Adobe Systems garnered IBM's blessing on its font format when IBM announced that it would support Adobe PostScript font technology on larger systems.

Although much of the computer press indicated

continued on page 180

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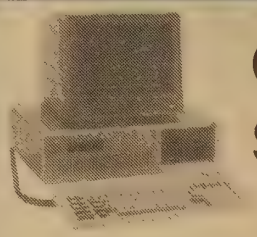

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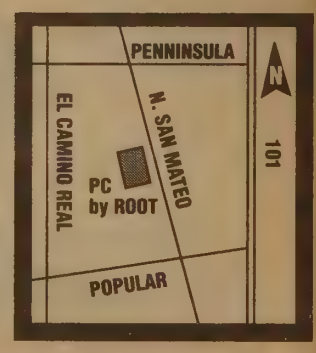

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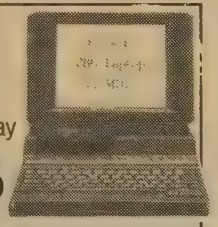

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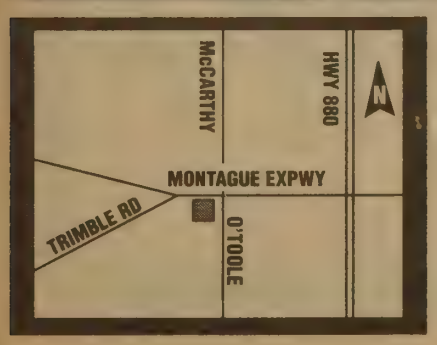

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Let us fantasize about truly functional manuals. Copy this to your favorite hardware and software. Ask that they make this cost-effective improvement a reality.

Let's Have Ergonomically Designed Documentation

Let's hear cheers for functional documentation—that absolutely essential part of computer products, too often tossed into the product package as an also-ran afterthought.

For the moment, consider the physical forms of paper documentation (we'll ignore, for now, esoteric electronic alternatives such as delivering documentation on CD ROM's or in hypertext stacks). Unlike normal books, we need to open documentation to a desired page, lay it on a desk, and have it stay open to that page. We also need to shelve manuals in minimum space, and identify them by reading their spines.

Tiny Books Not A Problem

Except for identification, these "use" issues are generally not of concern when manuals are 30-50 pages or less. They are usually just folded and saddle-stitched (a printer's term for stapling—or sometimes sewing with thread—in the fold). Saddle-stitched booklets are generally obedient to their users, once they're smashed open in the desired position.

The problem comes when documentation exceeds the small page-count that can be saddle-stitched.

Perfect Binding Isn't

Traditionally, paperback books are "perfect-bound"—where small numbers of pages are folded and stitched as above, then stacked together and glued along their spine, with the cover folded around them before the glue dries. (Really cheap ones aren't even folded and stitched; just separate sheets piled together; edge-glued; and thereby "easily removed" upon use.)

They are compact and easily identified on the shelf. However, this form is infuriating when it is used for documentation rather than literature: Either they won't stay open as needed, or they are quickly destroyed as their spine is crushed during irritated use.

The same ergonomic problem exists with hard-bound books. Further, hardbinding is time-consuming, expensive in manufacture and weighty (expensive) in storage and shipment—and guess who pays for it?

Loose-Leaf Binders—Designed For Destruction

Is there anyone who has regularly used reference materials in a three-ring binder who has not accidentally torn pages out? Is there anyone who can keep their reference shelf orderly with a batch of trapezoidal ring-binders leaning drunkenly back and forth? Is there anyone who doesn't begrudge the extra space taken by such ring-bound documentation? (Obviously a computer novice with an inadequate library.)

And, like hardbound books, we pay an unnecessary expense for ring-bound documentation.

Wire-O & Spiral-Bound—Better, But Not Best

Spiral-bound documentation is gloriously obedient when opened to a desired location. With their numerous "rings," only the most vigorous of users can even begin to tear sheets out.

And, surprise!—they're cheap. Friends at Apple tell me that wire-O binding is cost-competitive with perfect-bound books that have first been saddle-stitched (essential for repetitive use!).

("Wire-O" is the variation where the wire circles are parallel, rather than forming a spiral. Most of Apple's Macintosh manuals use this form.) Further, the plastic-ring analog of wire-O can provide very functional documentation in arbitrarily small quantity, using inexpensive desktop manual binder machines, in-house, or through many local printers-for-a-fee.

But the rings tangle and scratch, and their spinelessness makes them anonymous when shelved.

Apple tried solving the identification problem: Their back covers are extra long and can be folded around what is normally the open end of the book, with the title printed thereon. But the wire bindings still scratch and snarl with their shelf companions, and the flap's a hassle (pick, pick, pick!).

Ta Dah! The Solution!

Synergy Software has shown how to do it right: Use the wire-O, plastic version, or even a cheapoid spiral. Then print a single, long cover, with one extra fold, and:

Bind the back edge of the cover to the spiral, as usual. Take it to the outer edge of the back page; fold it back towards the spine; then fold it 90 degrees, twice—wrapping around, covering and shielding the wire-binding, and forming a spine on which the title can be printed; and have its other edge end at the outer edge of the front of the book, just as would a normal front cover. *It works great!*

Stays open wherever desired; no spiral tangles; no scratches; easy identification when shelved; pages don't tear out. Additionally, the extra-long cover provides a large, sturdy area for diagrams or text-spreads that is much more convenient than a normal foldout.

Is there anyone who has regularly used reference materials in a three-ring binder who has not accidentally torn pages out? Is there anyone who can keep their reference shelf orderly with a batch of trapezoidal ring-binders leaning drunkenly back and forth?

Attribution, well-earned (for documentation format and software content): Synergy Software produces megamonster terminal emulation and communications packages for the Mac. Folks, these are no toys; they provide robust simulation of a variety of high-end alphanumeric and graphics terminals (Tek, DEC, etc.) for interaction with mainframes. Buy a Mac and VersaTerm—perhaps for about the cost of high-end graphics terminal—and you have powerful emulation of numerous terminals, plus communications and file-transfer software, plus a Macintosh for *real* computing.

(Synergy also makes what appears to be a potent data analysis and graphing package allowing a Mac to massage and graph mountains of mainframe data, but I haven't yet dug up enough data to really exercise it. (2457 Perkiomen Ave., Reading, PA 19606; 215-779-0522.)

Quicklets

Recently, someone mentioned FORTRAN (is *that* still around?). Programming in FORTRAN is like saying Mass in Latin—but without the beauty.

Could hex cause hackers to be hippies? Must toes be exposed to count in base-16? Perhaps sandals or bare feet are programmers' necessary professional attire. ('Hex' is short for hexadecimal; base-16 numeration.)

Subtitle

Send suggestions to Jim Warren, Realizable Fantasies, 345 Swett Road, Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. ■

Copyright © 1990 by Jim Warren. All rights reserved. *Jim Warren founded* InfoWorld, *the DataCast proposal for broadcast-based paperless electronic newspapers, Video Initiative, Wireless Digital, Initiative, Inc. and the nation's largest public microcomputer convention. He was founding host of PBS television's "Computer Chronicles" series, founding editor of* Dr. Dobb's Journal, *founding president of the Microcomputer Industry Trade Association, and has chaired various computer professionals' organizations. He holds graduate degrees in computing (Stanford), medical information science (UC Medical Center), and mathematics.*

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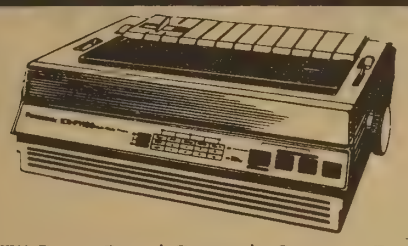

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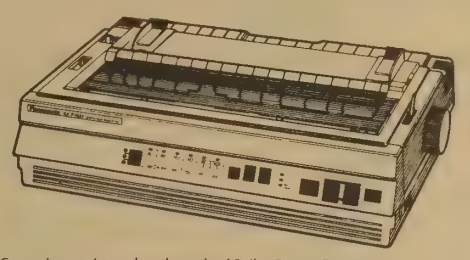

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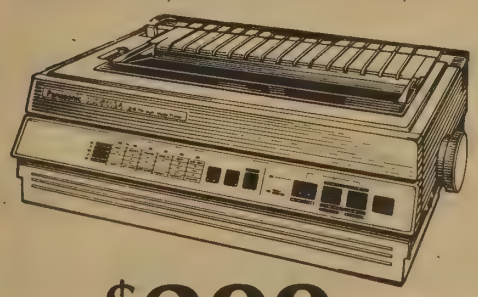

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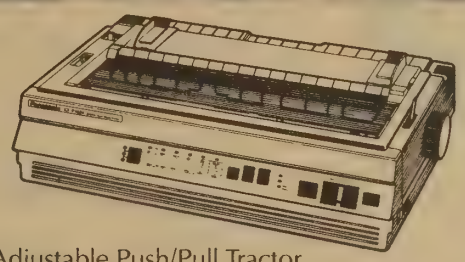

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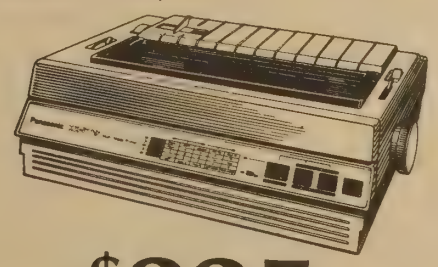

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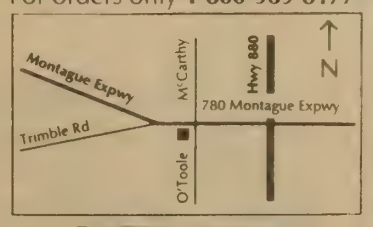

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Computing On The Go

Better Keyboards, Tandy's Portable Word Processor

BY ED KAHN

Portable computing has become a huge business with magazines and other specialized products hitting the market every day. What was once a niche market is now as big as the whole industry used to be.

For many years, small computers were so much less powerful than their desktop siblings that portables were used only when the job required portability. Few wanted to accept the necessary compromises of using a laptop as an only computer.

A Continuing Series On Portable Computing

Now, miniaturization has gone so far that it is possible to do virtually everything on a portable that you can do on a deskbound installation. With color portables, the final frontier has been crossed. A buyer today has a wide range of products from which to choose, going from the smallest hand-held units through the notebook models all the way to the muscle-building beasts that are more appropriately called transportables than portables.

A number of trends are obvious. Hard disks are moving to 40Mb as a standard. Even on the tiny Compaq LTE notebook computers, this storage capacity is available. The second trend is that VGA displays are taking over...and for good reason. Zenith's successful line of 8088 and 80286 portables are now offered with either CGA or VGA displays. As far as I am concerned, the importance of this shift is not so much for convenience on the portable itself, but rather for using an external color monitor. The difference becomes so important that I am not interested in using a CGA-only computer. Harsh words, but anything less than an EGA display on a color monitor makes it difficult to work for long periods of time. If you are using a monochrome display, there is no problem with CGA.

BEATING THE KEYBOARD LIMITATION

One of the main limitations of portable computing is the keyboard compromise. I love my keyboard and always am sorry to have to use even the best that come with laptops.

I don't seem to be alone in this attachment, as the first full-size keyboard for portables is now available. The GenoVation Model P101 keyboard ($295) carries an introductory price of $199.95. The design concept is clever.

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The keyboard plugs into the printer port with a special cable that also allows you to plug the printer into a piggyback port on the keyboard cable. Thus, you have the keyboard plugged into the printer port and the printer going into the keyboard cable. Software included with the keyboard then tells the printer port to accept keyboard input through the parallel port. At least that's the way it is supposed to work...and pretty much does.

But there are a few problems. I call up WordStar through a batch file that loads a bunch of macros through ProKey Plus ($99.95)—still my favorite keyboard redefinition program. Version 5.0, by the way, has greatly expanded capabilities and a much easier interface than earlier versions. It is simple to edit and redefine on the fly. My computer, however, freezes up every time I invoke the word processor through ProKey when using the P101 keyboard. You can overcome this through using the keyboard redefinition program that comes with the keyboard—adequate for most simple applications.

A second problem is that because the keyboard information comes

For many years, small computers were so much less powerful than their desktop siblings that portables were used only when the job required portability. Now it is possible to do virtually everything on a portable that you can do on a deskbound installation.

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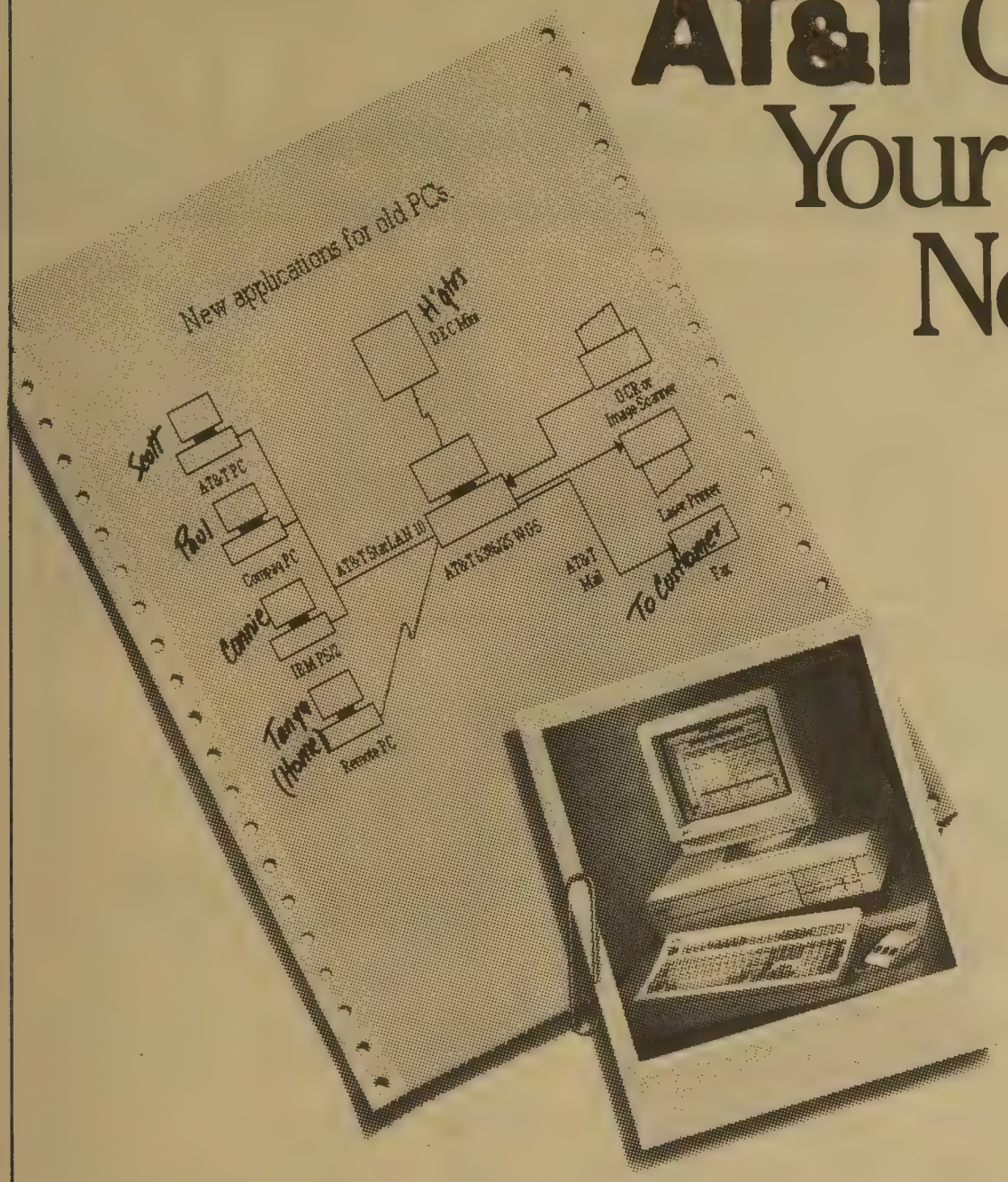

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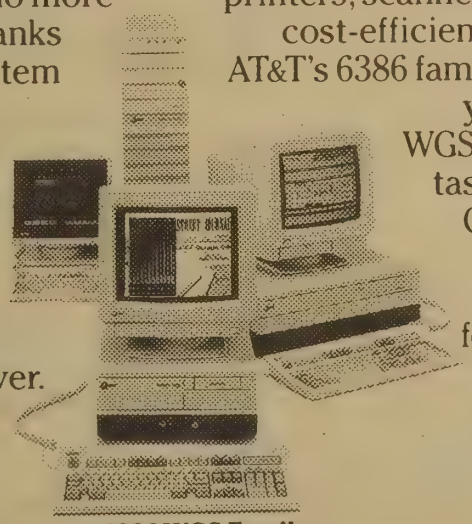

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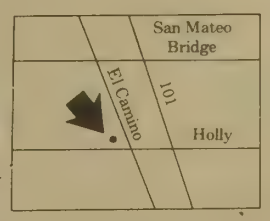

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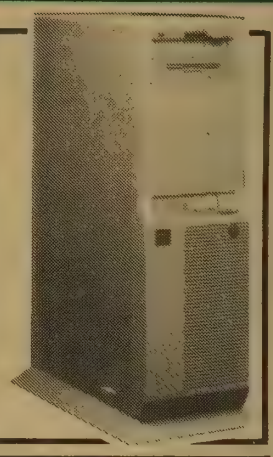

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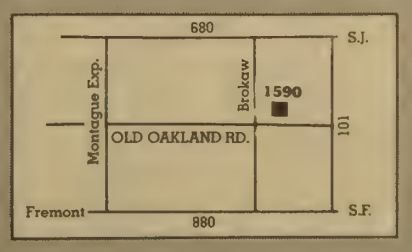

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in through the parallel port, certain operations simply do not work as smoothly as with the standard keyboard. **Control-Alt-Delete**, for instance, does not work from the P101. Interestingly enough, if you press the **Control** and **Alt** keys on the GenoVation and the **Delete** on the portable's keyboard, the computer will do a warm boot.

A third problem is that there is conflict with some software, including Microsoft Works ($149)—one of the best programs for a portable because it includes completely satisfactory modules for most of the applications we usually need: word processing, spreadsheet, database manager, and communications. Microsoft Works is rapidly becoming one of my favorite programs because it is so simple to operate, has a uniform interface for all of its modules, and has great tutorials included. But Works is put together in a way that causes problems for the P101. GenoVation mentions this in their documentation, which makes me suspect that other programs will also have problems with this keyboard.

In any case, these may be minor inconveniences, depending upon your software. If you routinely work with a laptop keyboard that frustrates you, have a look at the GenoVation P101. The keyboard itself works well and has a nice feel. It is easily installed and comes with a bunch of useful software utilities in addition to the installation program.

I still prefer the function keys along the left rather than across the top, but this keyboard is certainly adequate, and better than what you usually get on portables.

I must say that my personal preference is for portables to include a port for attaching any keyboard. My favorite is still the Northgate OmniKey Plus ($119). This keyboard still has the best feel and layout for my money. But it will not work with many portables because they lack the necessary port.

Also, the GenoVation keyboard uses very little battery power because there are no LED indicators. The P101 is really designed for portables—something that cannot be said about any other keyboard.

COMPUTER OF THE MONTH: THE TANDY WP-2

Although small computers have been around for a long time, the portable revolution really began with a host of similar computers typified by the Radio Shack Model 100. There were other models offered by NEC and Olivetti, but all of them were based on a design by Kyocera of Japan.

In any case, these little four-pound computers inspired many other models and were the first lightweight computers that were more than toys. They had a full-sized keyboard and were quite adequate for many tasks. They became especially popular with journalists. Their limitation was that they offered a relatively small display: about eight rows by 40 columns. By the end of their popularity, there were hundreds of add-on programs that would allow you to soup up these little wonders in many different ways. You were still stuck with a small display, but the tradeoff was that the unit was powered by a few AA batteries, which lasted for many hours. Through the built-in communications program, you could easily transfer the files either to a desktop computer or send them through a modem to your destination.

Today the smallest full-powered computers, costing thousands of dollars more, still have to go a long way to beat these old favorites. Perhaps no computer has enjoyed a longer life than the old Model 100 and its cousins. Mine is still in regular service, as my wife still likes it better than any model I have offered her for typing recipes. She types the entries and I transfer them to a desktop or floppy for long-term storage and formatted printing—which can actually be done directly from the portable if you connect a printer.

However, Tandy has finally come out with a successor that offers less and more. Less in the sense that the new model WP-2 is only for word processing. You cannot program in BASIC as you could on the earlier model. But the screen now gives you 80 columns, there is a full 54K of memory available for data files, the unit weighs a little over three pounds and is about one inch thick. For $349, this is a bargain.

This is a good deal more sophisticated than the earlier models. For one thing, because it is designed primarily as a word processor, a good deal of software is built into ROM. This includes a full 100,000-word spelling checker which can be run either to check a word or document or beep every time you type a word that it doesn't know. (My typing skills are too imperfect for this to be anything more than an annoyance.) In addition, there is a thesaurus which also boasts a vocabulary of 200,000 words. These capabilities go far beyond what is available in other machines of this size.

You can do all of the routine operations like cut and paste, find and replace, and block off words, paragraphs and the like. This is a sophisticated machine.

The memory setup is equally advanced. It comes with 32K and is expandable to 64K. But in addition, you can attach a number of storage devices including a disk drive ($219.95), a cassette recorder or a 32K memory card ($119.95). The memory cards, about the size of a credit card, plug into the side of the computer. They contain their own power supply and are an easy and efficient way to store data. Tandy has some plans to release other memory cards that contain application programs, but I see the value of the computer in its word processing abilities.

In addition to word processing, there is built-in communications software much like the program on the old Model 100s. A modem easily attaches through the built-in serial port. There are also calendar and phonebook functions. Once again, they are not really powerful, but could be useful on the road.

The real value of this computer, complete with its own slipcase and reasonable documentation, is as a word processor that can transfer files either through a cable or a modem to a full-featured desktop machine. A small weight and price make this a portable alternative to consider. ■

Tandy's new model WP-2 is only for word processing. You cannot program in BASIC as you could on the earlier model. But the screen now gives you 80 columns, there is a full 54K of memory available for data files, the unit weighs a little over three pounds and is about one inch thick. For $349, this is a bargain.

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- 80387-20 360
- 80387-25 . . . . . CALL
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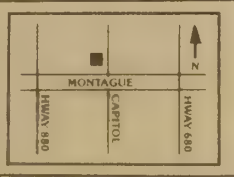


Networking The Mac Office

Exchanging Files And Mail With QuickMail

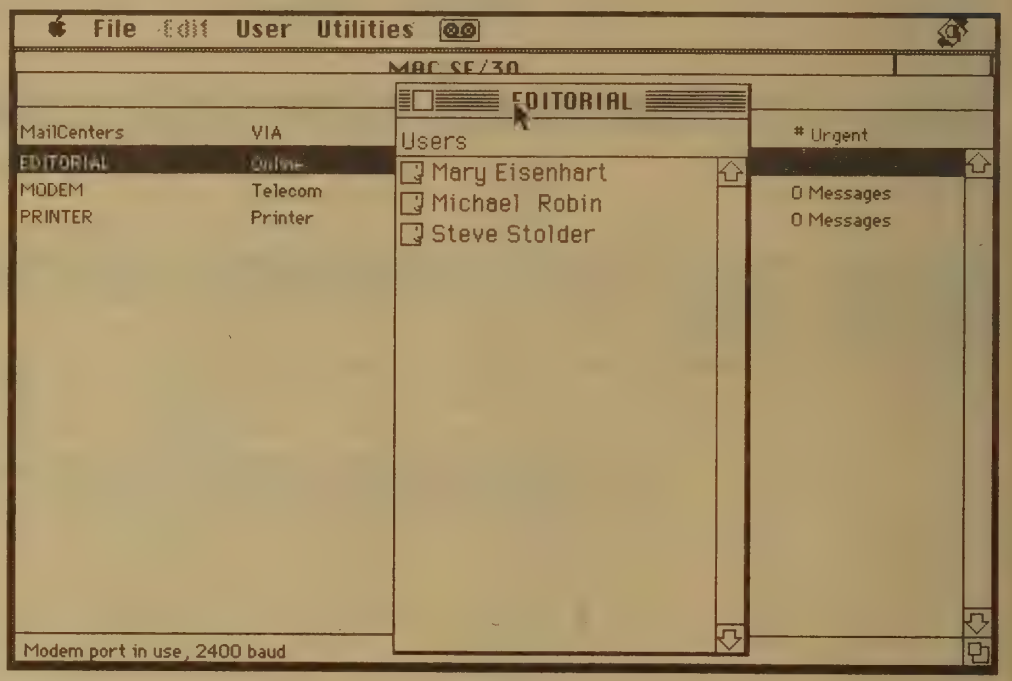
BY MARY EISENHART

Last month we began our foray into the world of Mac networking by connecting three Macs to a laser printer.

Well, as you may have noticed as you travel through life, no sooner do you achieve one goal than you start thinking how nice it would be if you could do all this other stuff, too. In our case, once three editors discovered the joys of sending documents to the printer from our workstations, we decided it was a little ridiculous to keep passing diskettes back and forth every time one of us needed to look at another's work—a pretty frequent occurrence around here. Also, given the fact that we often aren't in the same place at the same time, and adding more paper to my desk is a sure way to consign your message to oblivion, it wasn't a bad idea to have some reliable method of getting messages to each other, either.

Along came QuickMail. And, compared to the DOS networking nightmares recently described by LAN columnist Wayne Yacco, to say nothing of the arcane mysteries of doing the same thing in UNIX, this product is a godsend.

This article has no pretensions to being a complete review of QuickMail, which comes from the good folks at CE Software in beautiful West Des Moines. CE also brings us DiskTop (currently in a new version bundled with GoFer), the MockPackage, QuicKeys, and Vaccine. QuickMail exists in versions for Mac and PC; it's a deep and value-laden product that allows you to construct elaborate networks, build bridges, access remote systems and route downloaded messages to users on the network, and many other things that we'll come back to in a subsequent article when we're past the getting-our-feet-wet stage. (Also, CE has recently shipped version 2.2 of the program, which incorporates more sophisticated tools for remote and multivendor environments and lets you embed spoken messages in your email using MacRecorder from Farallon; we've been using 2.0 and 2.01 for the past several months.)



QuickMail lets you set up MailCenters and assign users to them

BEFORE YOU INSTALL QUICKMAIL

Migrating from a single-user (the Unconnected Mac) to a multiuser work situation, even at this level, requires getting familiar with some concepts you may have managed to avoid quite handily so far. While QuickMail (and most Mac networking packages) are paragons of user-friendliness, the act of networking those Macs creates administrative and housekeeping chores that don't exist in the single-user world. The manuals are simple and accessible, and this is definitely one of those situations where you'd do well to read them before you do anything.

QuickMail works on a wide range of networks and is compatible with most networking standards. For purposes of the relatively low-level networking we're talking about here—running under AppleTalk over PhoneNet connectors—there are essentially two types of network options: server-based, such as AppleShare, which requires one Mac on the network to be exclusively dedicated to use as a server; and distributed, such as TOPS, which does not require a central server.

QuickMail works in both types of configurations (and, though it will run under TOPS, it does not require it to perform its functions among the connected Macs).

In our case, we did not want to go the dedicated-server route. For one thing, we didn't have an extra Macintosh floating around the office to handle this specialized

NEXT MONTH

Next month we'll take a brief vacation from networking issues to address another pressing problem in the Mac office: what to do when your business outgrows its all-in-one software package? We'll talk about a real-life adventure moving a database from Microsoft Works into FileMaker II.

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task, and for another, it's a relatively rare occurrence for the three of us to need to work on the same files. If we had a constant need to access the same data, for instance, as our accounting department does, the dedicated server would be a more attractive option. It cannot be overstressed that the type of work you're doing and the way you do it are matters you should consider long and hard *before* you commit yourself to a particular type of network.

Regardless of which configuration you use (and the setup directions will vary slightly according to whether you're using the AppleShare or QM Server options), QuickMail requires that you choose a machine with a hard disk (and preferably at least 2Mb of RAM) as a server for QuickMail, and to designate a user as the custodian of each MailCenter for performing housekeeping tasks. In our case, this was not a rough decision: given a choice between a 1Mb Plus, a 2Mb Plus, and a 4Mb SE/30 with an 80Mb hard disk, we made the SE/30 the server. (Our minimal requirements don't begin to tax the SE/30's performance; it's sitting on my desk and being used pretty constantly, which might become a problem if we had three dozen talkative users instead of three less-talkative ones. In general, CE recommends using the least-busy Mac for a server.)

QuickMail includes an Administrator disk and manual, as well as a serial-numbered User disk and a quantity of user manuals equivalent to the number of licenses you've bought (1, 5, 10 and 50 are the current options). CE proudly notes that there are no counters on the user installation disk or other obnoxious protection schemes; instead, you're allowed to create many user accounts, any one, five, ten, or 50 of whom can be logged on in your MailCenter (workgroup for purposes of receiving mail, essentially) at one time. Excess users have to wait till someone's logged off before they can access QuickMail.

QuickMail's modular approach makes things handy down the line. When your company grows and you need more workstations, just buy another QuickMail package and install more users.

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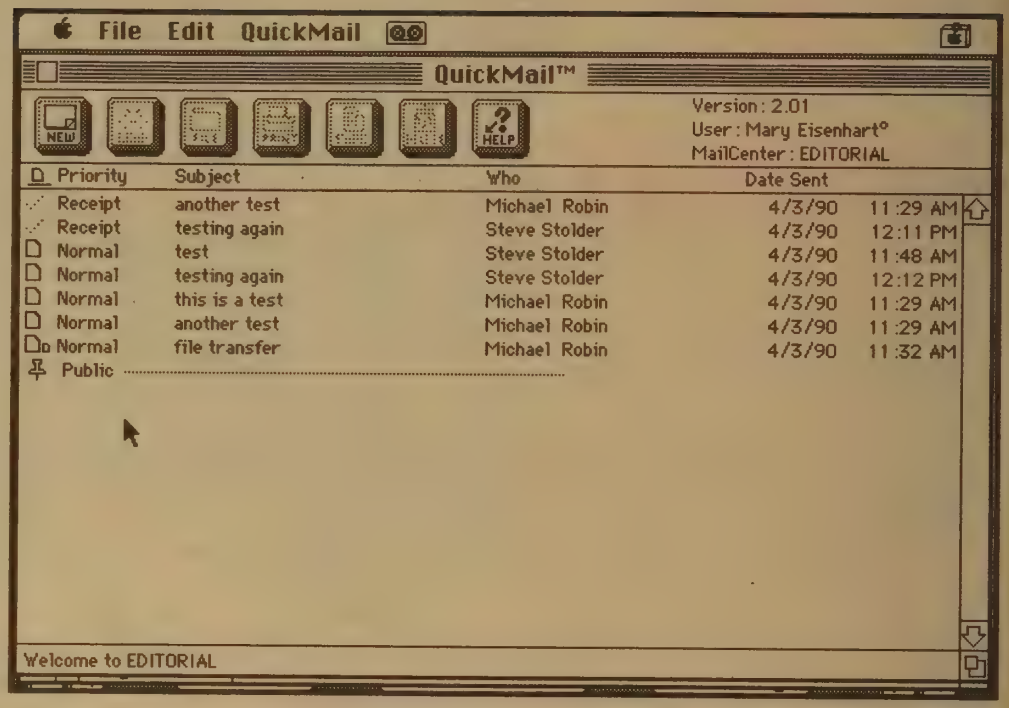
File Edit QuickMail
QuickMail™
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HELP
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User: Mary Eisenhart°
MailCenter: EDITORIAL
Priority Subject Who Date Sent
Receipt another test Michael Robin 4/3/90 11:29 AM
Receipt testing again Steve Stolder 4/3/90 12:11 PM
Normal test Steve Stolder 4/3/90 11:48 AM
Normal testing again Steve Stolder 4/3/90 12:12 PM
Normal this is a test Michael Robin 4/3/90 11:29 AM
Normal another test Michael Robin 4/3/90 11:29 AM
Normal file transfer Michael Robin 4/3/90 11:32 AM
Public
Welcome to EDITORIAL

When you open the QuickMail DA, you're presented with a list of your accumulated messages. Click to read them, or click New to create your own. Note that different types of messages have different icons, and that you can enclose files or request a receipt when your message is read.

INSTALLING QUICKMAIL: ADMINISTRATOR

First, take your QuickMail Administrator disk and User disk and copy them. Put your master copies away and install from the copies. You'll be glad you did when your Mac eats your Administrator disk and you don't have to make tearful phone calls to Iowa at all hours. Make sure the machines you want to install the program on are running at least System 6.0.2; the server must be running 6.0.3 or greater.

Insert the Administrator disk in your floppy drive, create a new folder called QuickMail Folder on your hard disk, and follow the easy directions (most vital information for installing and administering the network is contained in a 17-page introduction) to copy appropriate files from the floppy into the System and QuickMail folders. Restart your machine.

In the QuickMail folder, open QM Administrator. You'll be presented with a dialog box asking you to create your first Mail Center. (Again, consider design matters—three of us don't require a multiplicity of MailCenters, since each can have up to 100 users, but consider which people are likely to be sending messages to each other most often and plan accordingly.) Give it a name and assign it a password—you'll be repeating this process fairly often, but in this particular case the password is not optional. Be sure to select a non-obvious password and keep it in a safe place—your system will be more secure, and you won't be tearing your hair out in large handfuls when you keep getting the Incorrect Password message. If you forget the password to the MailCenter, you do not have a workaround. What you have is a nerve-racking reconstruction job ahead of you, because you won't be starting from scratch when you develop this problem. Be a good administrator and do not fall into this pit.

You're given the chance to configure various options—among other things, QuickMail will let you post public messages, hold conferences with other users in real time (and with a self-generating transcript!), keep various logs and allow access by modem from outside the network. Different work situations make different options attractive, but if you decide to change something later you can always reconfigure from QM Administrator.

Then you'll be presented with a box with an empty user list. Select Create... from the User menu, and enter each user's first name, last

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Arcade #3	G003	Mario, Pacman, pac-gal...
Fly/Drive #1	G007	Cars, planes, racecar, all great....
Fly/Drive #2	G008	More cars, trucks, planes, and others...
Space wars	G012	Space war, batalia, space invader....
Pinball Machine	G014	6 great pinball machines. The flippers will amaze you.

BASIC GAMES

Basic Bonanza #1	G015	Too many games to list. 40 diff. files.
Basic Bonanza #2	G016	55 different files.
Basic Space Wars	G019	Shoot-em ups in space.
Basic Fly/Drive	G021	Trucks, planes, submarine...

CARD GAMES

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Basic Card	G036	Euchre, Cribbage, Solitaire...
Solitaire	G037	Several types of solitaire.
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GAMBLING & LOTTO

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Dominos	G121	Dominos, backgammon, checker...
Tommy's wheel	G122	Wheel of misfortune, easy to use.
Block games	G123	3 games using blocks.
Tommy's 21	G124	More games from Tommy's toys.
Tommy's saucer	G125	Drive a flying saucer if you can figure out the aliens controls.
Tommy's Trek	G126	The familiar trek game is well done.

COLOR GRAPHIC GAMES

Cave Quest	G042	Diff. from many other fantasy role playing computer games (in graphic)
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Adventures	G044	Labyrinth, excellent maze game.

MISCELLANEOUS GAMES

Trivia	G110A,B	Great trivia game rivals the board game.
Tommy's trivia	G111	Questions prepared by aliens from beyond to stump earth kids.
Trivia	G112	TV shows, science, grab bag, star war.

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Label Master	U133	Makes lists of labels.

PRINTER & BANNER UTILITIES

Bannerific	U150	Produces large banners.
Banner maker	U151	Lets you use diff. fonts.
Fontastic	U155A,B	Edit and generate fonts.

GRAPHICS

FORMS & LETTERS

EZ-Form	FL01	Form generator w/many forms on disk & good documentation.
Formgen	Fl02	Easy to use, menu driven, online help
Legal forms	FL03	Over 100 legal forms to be used.

ART & PAINT

PC-ART	GR15	Easy to use graphics drawing program
Finger paint	GR16	Read documentation to run, also has a demo on the disk.
Macpaint	GR17	Presentation graphic screen system.

FONT GENERATORS

Newfonts	GR22	Turbo pascal graphic font designer.
EGA Font ED	GR23	Unusual to find one for the EGA.

PRINTING, GRAPHICS & CLIP ART

PMmain	GR25	Great clone of the print master prog.
Artcom	GR26	Get more use out of your graphics.
Printmaster	GR27	Assorted graphics to use with your favorite page layout program

PRESENTATION GRAPHICS

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PC-Graph	GR46	Menu driven, plot Dbase and report files created by PC file.

UTILITIES

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Egademo #2	This one has a Rolex clock on it, roses, and Mona Lisa with her famous smile.
Egademo #3	EGA paint 2005 demonstrates Alaska and Arkansas in living color.
VGA Demo #1	It has a waterfall that is truly beautiful, fireworks, plus much more.

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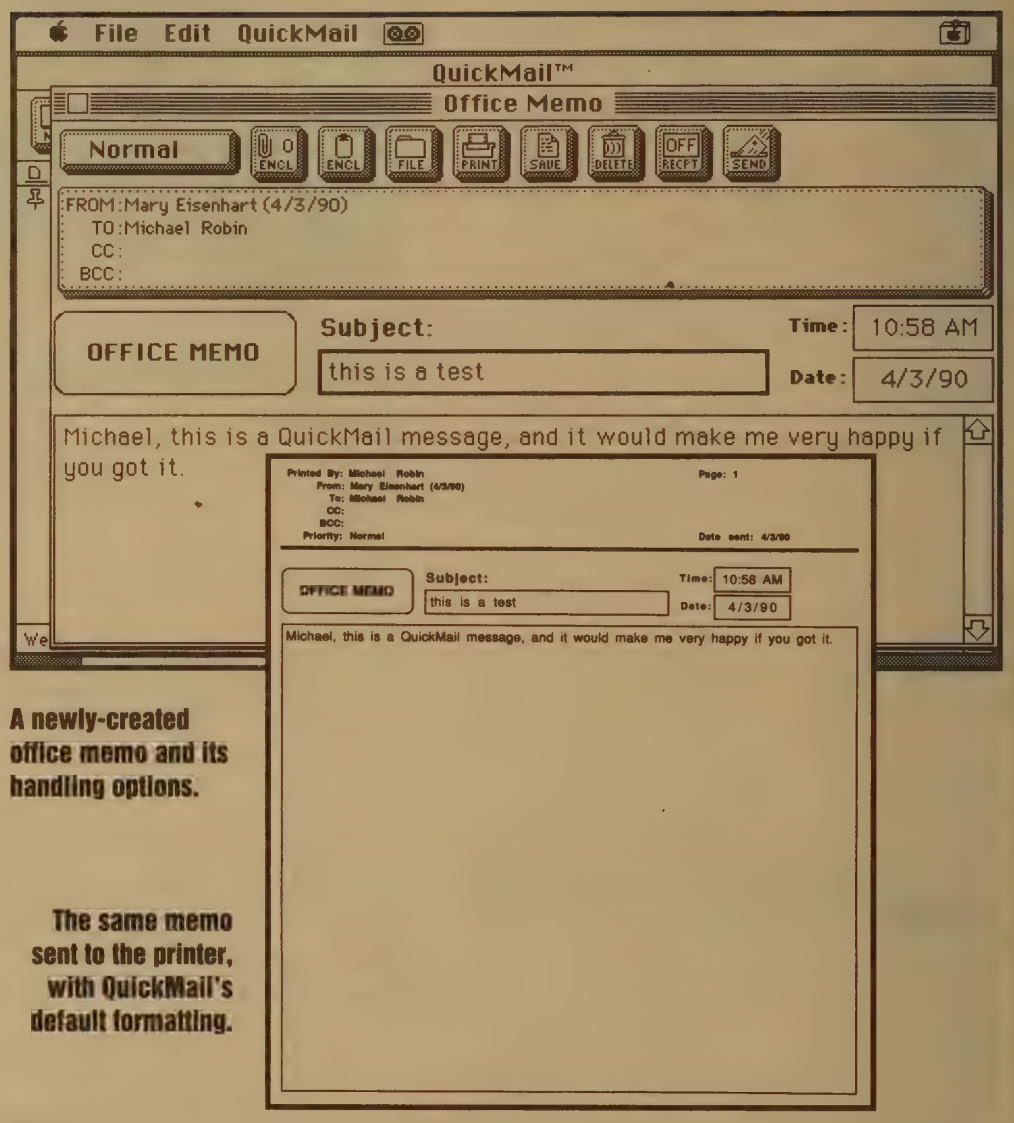
name, and password (if you decide to assign passwords to users—otherwise, leave it blank), then click **Add**. Be sure to include yourself if you need to be in this group. When you're done, click **Done**. Designate one user as the Custodian for each MailCenter; the Custodian adds and deletes names from the user list and routes mail that can't find its proper destination.

USER INSTALLATION

Now pick up your manuals and disks and go visit the people you just assigned to the mail center. Give each of them a copy of the User Manual. Follow the installation instructions (which usually consist of nothing more than double-clicking QuickInstall and letting things take their course) to put QuickMail on each machine, and when you get the dialog box asking you to restart, do it.

Each user should now get a QuickMail login screen on startup. Using the pop-up menus, the user selects the appropriate MailCenter and user name, and logs in (if the *user* forgets the password at this level, you can go back into QM Administrator and assign a new one).

QuickMail should now be listed as a desk accessory under the menu. To access it, just click on its name.



A newly-created office memo and its handling options.

The same memo sent to the printer, with QuickMail's default formatting.

SENDING AND RECEIVING MAIL

QuickMail gives you many options for formats, file transfer and information allocation. You can print documents directly from QuickMail or designate the printer as a MailCenter and route incoming messages to it for hard copy. You can set up your modem as a MailCenter and have it retrieve your mail from online services and route it to you.

In our case, Steve, Michael, and I mainly need to exchange the occasional note, but more often Michael has written an article that I need to edit, or I have spent three days working on a database that Michael needs to format into reports, or I owe Steve a review and am too lazy to walk it into the next room.

No problem. From inside QuickMail, click the **New** button, which allows you to select a variety of formats from the menu (from Office Memo to While You Were Out). You type in whatever message you consider appropriate, and if you want to enclose one or more files, just click the **Enclosure** button. You'll get another dialog box, much like the one you know from the **Open** command in every Mac application ever created. Select the file you want to enclose. Click the **Send** button, and off it goes to its appointed destination.

THE FUTURE

Obviously, the three of us are barely scratching the surface of what QuickMail can do. The beauty of the product is that it's pretty reasonably priced even if you don't do any more than we're doing right now, and it allows you to move into more sophisticated operations from the same package as your needs expand. I look forward to the happy day when our receptionist puts all my phone messages into QuickMail, for instance. And the LA office can get messages to everybody's Mac overnight. But that's for another day.

We've found CE a joy to deal with in support matters. True, phone support is on your nickel, 9 am to 5 pm Central time on weekdays, but our experience has been that response is prompt and accurate. CE really shines in the area of online support, with access through CompuServe, GEnie, MCI Mail, CONNECT, AppleLink, and America Online, checked frequently and promptly answered.

Networking raises all manner of technical and other issues that don't arise in the single-user setting. Also, Macs are getting more complicated by the day, and conflicts between applications (especially INITs) are increasingly common. In general, we've found QuickMail very well-behaved with a wide range of applications. About the most dramatic problem we've encountered is that QuickMail (quite properly, we think) makes extensive use of command-key equivalents so you don't have to pull down frequently-used menus all the time. Unfortunately, these may conflict with something you've got set up in MacroMaker or some other program that lets you configure such matters: Michael has discovered that half the commands in his customized Word call up QuickMail screens, so there's going to be some interface-tweaking in his future. In the course of making screen dumps for this review, I also discovered that Command-Shift-3 not only makes the screen dump perfectly well, but also opens a new Routing Request (invoked as Command-3).

QuickMail is available in a 5-user pack for a suggested retail price of $339.95, 10-user for $499.95, and 50-user for $2,299.95. Single-user packs are $189.95, and a single-user add-on package is $89.95. (CE Software, 515/224-1995) ■

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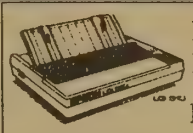

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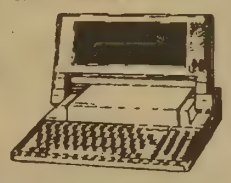

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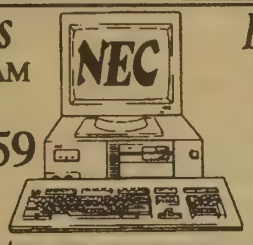

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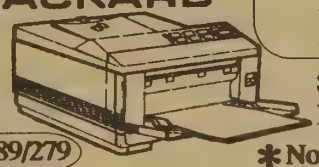

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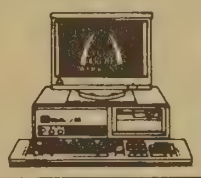

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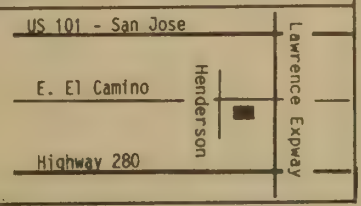

Choosing The Right PC Database For Your Business

BY CRAIG BOBCHIN

Although the largest use of PCs in the office environment has been spreadsheets and word processing, the database management system, or DBMS for short, is the mainstay of most businesses. This article will examine your options in choosing a DBMS and help you make a wise decision.

FLAT-FILE VS. RELATIONAL

In the world of computers there are two types of database systems: flat-file and relational, or multi–file.

The phone book is a good example of a flat-file database. A flat-file consists of data organized as a table (see Fig 1). The flat-file is unable to read any information from any other file, regardless of whether the other file has any information that is needed. Flat-files work best as phone books and mailing lists. Some examples of flat-file programs are Q & A, PCfile, Rapidfile, and Reflex.

The other major type of DBMS is called relational or multi–file. The main advantage of a relational database is the ability to look at and update data from files other than the one you are working on.

Suppose you have a database table of employees in your office, and that it contains data such as the name, age, address, dependents, etc., of the employee. Let's imagine that you want to know about the department a certain employee works in. You could store all of the department information (e.g., manager name, location) in the same file as the employee information, but since you would probably have the same information in several records, you would be both duplicating data and wasting precious disk space (see Fig. 2). You'd also be running the risk of having conflicting versions of the same information.

A more efficient method of handling such a situation would be to store the department information in a separate table and read from that table when needed (see Fig 3). If the data is stored in this fashion, there is less redundant (and possibly inconsistent) information, and less disk space wasted.

The majority of relational databases are programmable: it is possible to write a program or group of programs to accomplish many and varied tasks, such as retrieving information, or error checking during data entry. Some relational packages are dBASE III and IV, R:BASE, Paradox, and Revelation.

WHICH ONE'S FOR YOU?

Which one do you purchase? That depends on your needs. If you need just a phone or address list, a flat-file system is all you need. But if your needs are more complex—for example, if you want to automate your accounts payable system—you'll probably need a programmable relational DBMS.

A great deal of your decision may also be based on your budget. The more complex and sophisticated the program, the more expensive it's likely to be. When evaluating the costs of a DBMS, don't forget to factor in the hidden costs—learning time, development time, and costs for outside consultants if needed.

This section is a brief overview of some of the more common programs in each category. The examples here are not meant as reviews, just examples of the type of programs in each category.

FLAT-FILES

Q & A: This is an excellent implementation of what a flat-file database should be. It is easy to set up a database file, and even easier to query it. Symantec has included both a word processor and an artificial intelligence module to assist you in retrieving your data.

The word processor makes mail merges a breeze, and the rest of it is also good. It has all the expected features of a midrange word processor.

The real gem of the program is the Intelligent Assistant. This module is designed to aid you in getting information out of your database file by allowing you to ask your questions in plain English. Imagine you have a database of all your customers in Q & A. Now let's say you want a list of all of your customers who owe you more than $500. All you have to do is issue a statement similar to "List all of the customers who owe me $500.00 or more." The Intelligent Assistant will then examine your command, ask you to double check that it is correct, and then give you a list of all customers who owe $500 or more. The Assistant substantially reduces the time and headaches of programming.

PCfile: Don't be deceived into thinking that only products of big-name corporations can do the job for you. Many smaller companies, including several shareware vendors, also offer high quality software, often at bargain prices. One such company is Buttonware. In addition to PC–Type+ (a fairly good word processor) they sell PCfile, one of the better selling shareware programs on the market.

There are several versions to choose from. Most, if not all, are available on BBSes across the nation as well as at computer swap meets and local shareware distributors. One ver-

Name	Age	Birthday
Jeff	26	10/1/63
Sue	25	6/5/64
Marvin	15	2/12/74
Mary	45	12/26/44

FIGURE 1

Flat-file databases organize information in table form.

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• 386-25MHz Basic System w/80MB Seagate Hard Disk	1801	1938	2098	2138
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• 386-25 MHz/64K Cache Basic System w/80MB Seagate Hard Disk	2151	2288	2448	2488
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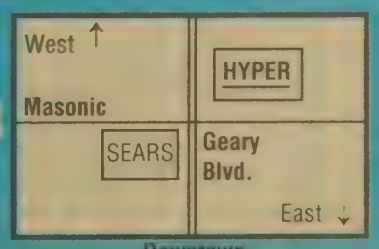

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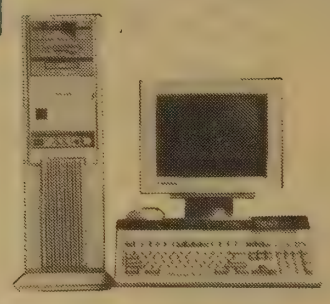

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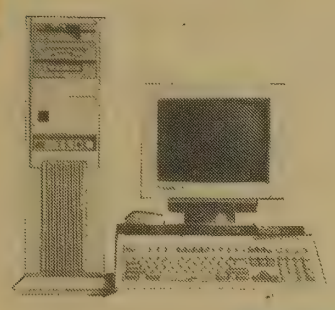

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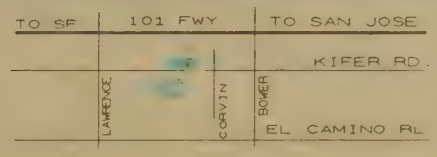

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If you just want a phone or address list, a flat-file system is all you need. But if your needs are more complex—for example, if you want to automate your accounts payable system—you'll probably need a programmable relational DBMS.

sion, PCfile:dB, is sold at Egghead Software stores. This program has the ability to read and write dBASE compatible files—a real plus, if all your files from the office are in dBASE format, and you don't happen to own a copy of dBASE. All you would have to do is copy the files you need to a floppy to bring home, boot up PCfile:dB, and you'll be able to query the database, run reports, and even enter new data

Granted, there are no real programming abilities yet, but there have been rumors of a programming language for some time. For affordable dBASE compatibility, you should really take a long hard look at PCfile.

Flat-file databases are all similar in their main purpose, extracting information from a single file. Some programs have the ability to read from, but not write to, other unopened files. This power, while nice to have, does not make a program relational.

RELATIONAL DATABASE MANAGERS

Your boss rushes into your office screaming that he needs all the information regarding the "ABC Widget" sales for the past nine months.

Now, since this is a project involving two others as well as yourself, all of the information is not in the same place. It's scattered in several different file cabinets on your floor. You could go scampering about in search of all of the information needed. Or you could have kept several different databases with all of the information on your PC. However, when it comes time to retrieve all of that information, it could be a minor nightmare.

This is the beauty of having a programmable relational database. With a properly written program, you would be able to enter all of the data into the database as it arrived on your desk, then just run a report based on any criteria that you needed. The data could be in any number of files.

This power does not come easily. It takes some time to learn the programming language and the best ways to relate different files. While there is a learning curve, the more powerful programs will do a significant amount of the programming for you.

dBASE And Friends: Probably the most famous of the programmable databases is dBASE. There are several versions; the most famous is dBASE III. This program became an industry standard, and with good reason. It is very powerful and a fairly easy language to learn.

In the ensuing years, several competitors to dBASE have arisen, chief among them, Clipper and FoxBase. While Clipper is mainly a

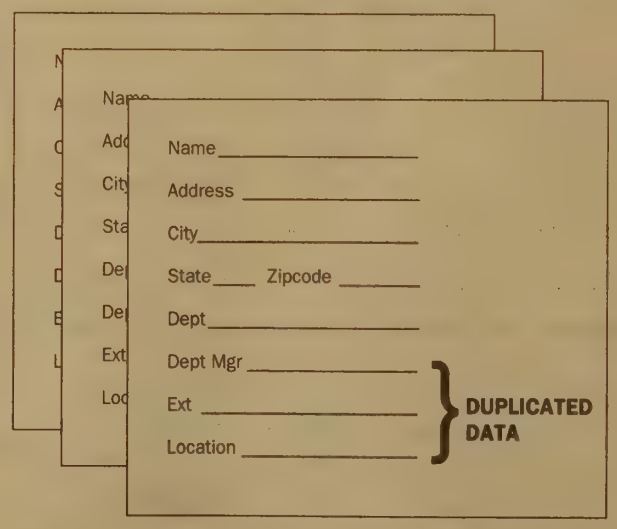

FIGURE 2

If you have several flat-file databases with duplicate information, it's hard to keep it efficient or consistent.

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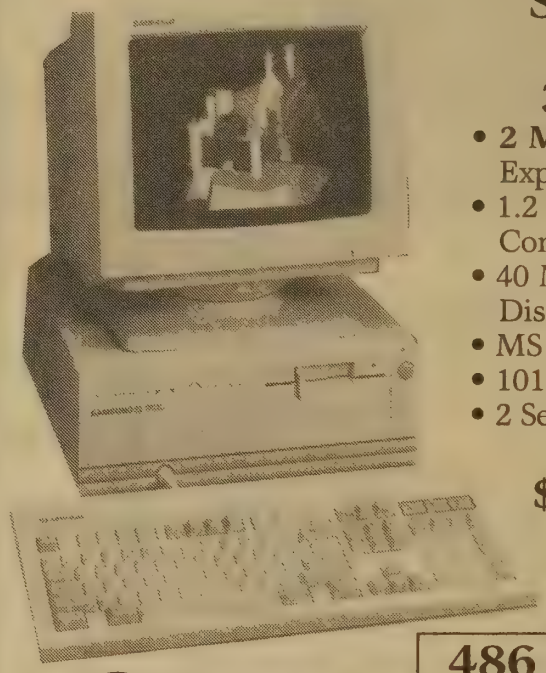

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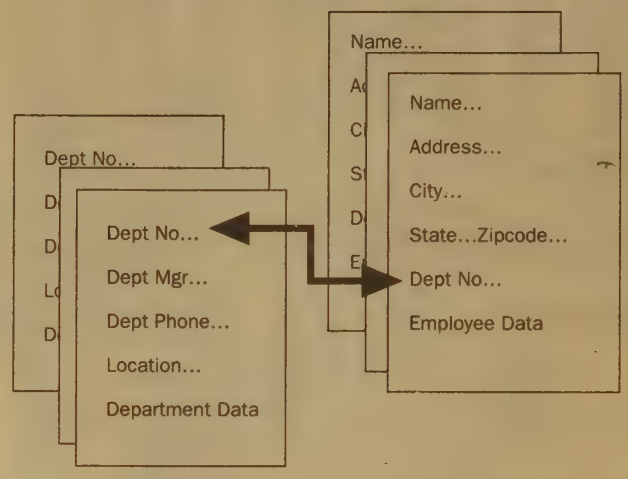

FIGURE 3

Relational databases automatically update the information wherever it occurs.

compiler—that is, a program that will turn dBASE programs into standalone .exe files that do not need dBASE to run—it also has extended the dBASE language to new heights. FoxBase, on the other hand, is a dBASE compatible applications environment. It will do anything dBASE can do, just a whole lot faster.

Many people have switched from pure dBASE to FoxBase or Clipper for the advantage of running all of their old programs without the constraints of dBASE. Fox Software has recently released a dBASE IV-compatible program called Foxpro, which is faster and has far fewer bugs in it than dBASE IV.

R:BASE: Chief among the competitors to dBASE is a program called R:BASE, by Microrim. R:BASE is a very powerful DBMS. It is not dBASE compatible, but is able to import and export to dBASE files.

R:BASE has a very good Prompt by Example mode, where you can design your database by menu selections. It also has an applications generator that will the free up the programmer by writing the majority of the code for you. You will still need to write custom programs to do special tasks.

While the application's interfaces are not as showy as those done by dBASE IV, they do run faster. R:BASE also has one of the best implementations of SQL (SQL, pronounced "Sequel," is an industry standard database query language). If you currently use SQL, R:BASE will be easy to learn.

Since Microrim has released a true compiler *a la* Clipper, you can turn your R:BASE programs into standalone programs that will not require R:BASE to run. As an alternative to dBASE and its clones, R:BASE is worth a look.

REVELATION AND ADVANCED REVELATION

From the world of minicomputers comes a database program based on a very powerful operating system: Pick. The program started as an operating system on minicomputers. In the early '80s it was licensed by Cosmos (Revelation Technologies) and released as Revelation.

Revelation is a very powerful DBMS. Revelation and Advanced Revelation (AREV) allow for a record size of 64 K—64000 bytes in each record. dBASE IV, by comparison, can have a maximum record size of 4 K. Both REV and AREV come with application and screen generators. AREV is by far the easier product to work with.

The main programming language is R/Basic, a proprietary version of the BASIC language not compatible with any other version of BASIC that is sold. If you need to store a lot of records and those records are large, you may want to consider Revelation or Advanced Revelation.

MAKING THE FINAL CHOICE

For many people the choice is obvious. They go with dBASE. But whether you need a flat-file database or a programmable database with relational capabilities, you have a large variety to choose from.

Before you spend any money on a program, talk to people who have used it, and, if possible, get a demo version from the manufacturer. This way you can get a feeling for the program's compatibility with your needs and work style. ■

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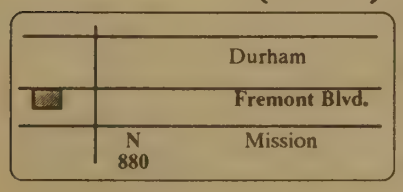

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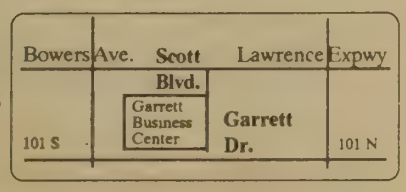

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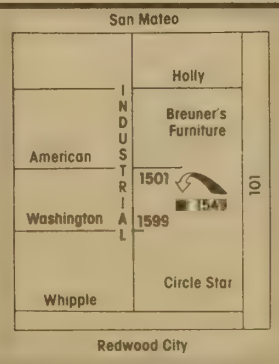

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Setting Up Your Network—

A Cautionary Tale Of Compatibility Concerns

BY WAYNE A. YACCO

LOCAL AREA NETWORKS

Local area networks come in a variety of sizes and prices. Not all of them are designed for large-scale users or require substantial investments of time and money. Naturally, smaller networks trade off some features to achieve savings. Larger networks typically offer far more sophistication—everything from email to management tools for controlling resources and users' access, passwords and privilege levels. They are often faster and serve more users.

THE INVISIBLE NETWORK—A LOW-COST ALTERNATIVE

However, smaller systems for the PC, like the Invisible Network from Invisible Software, have definite advantages. While Invisible sells a standard Ethernet adapter that runs its system at 10 megabits per second (mps), it also has boards at $215 and $315 that can operate over double twisted-pair wire at 1.8 and 3.0 mps respectively. Invisible sacrifices some speed for its less expensive adapters and its network software can only handle 45 users—about half of what NetWare supports. But all of Invisible's adapters are NETBIOS compatible and run network versions of software that support this popular protocol. In addition, other NETBIOS network software like IBM's PC LAN and Novell NetWare can also run on them.

Copyright © 1990 by Wayne A. Yacco. All rights reserved. *Wayne Yacco is editor-in-chief of Vulcan's* Computer Buyer's Guide. *An editor, writer, and consultant specializing in microcomputers and their business applications, he writes articles, columns, and reviews for many trade and business publications. He can be reached at Box 269, Burbank, CA 91503.*

Invisible's network software, Net/30, is an example of a peer-to-peer network. Peer-to-peer networks have nodes with equal network capabilities. That means that any node can serve any other. Any node can obtain data from any other. Net/30 allows you to decide whether a node will be a server, a requester, or both.

The price for any of Invisible's boards includes the company's Net/30 network software and utilities. Everything from network diagnostics to email to print spoolers to management utilities is included. That's already inexpensive, but there's more—the twisted-pair wire is the same type of conductor that telephones use, and it's not only cheap, it's relatively easy to install. In fact, the whole system is easy to install. It runs as an extension of DOS and uses DOS file management. Disk drives don't have to be reformatted. Net/30 runs on machines with far less than 640 K, and only requires about 32 K in addition to DOS. It's perfect for PCs and XTs.

REAL-LIFE COMPATIBILITY PROBLEMS

Despite all this simplicity, computer communication is not as simple as it could be. There are always potential compatibility pitfalls with memory addresses, interrupts, and DMA channels that can be in use with other peripherals. This is especially true if you're using older equipment that either wasn't built with communications in mind, or wasn't built to exactly copy the IBM PC, or both.

I had a choice of five computers, of various PC and XT types, for a hands-on look at the Invisible Network. I went to work setting up the network on a pair of Compaq Model 1 portables.

The first problem I ran into was a very old system BIOS on one of the machines that didn't perform a BIOS scan. The network didn't automatically load on that machine, so I compensated by running the executable version of the network program. But even though everything installed correctly on each machine, the network couldn't send messages between them.

It might have been a cabling problem. That, along with incorrect switch settings, is the most common difficulty users experience. But at the behest of Invisible's head of marketing I ran the diagnostics, and the tests ruled out a cable problem. It was probably a hardware conflict rather than a defective product, but without a spare board, there's no easy way to check.

The Invisible network adapter I had, the Model 200, was designed for machines with an 8-bit bus. It would allow me to select different interrupts or to run the operating system from either RAM or ROM memory (changing the DMA channel requires an AT-class machine and a Model 300 card). I tried a setting that prevented the cards from using the software from ROM. Now both were running in RAM, but it didn't help. Since neither Compaq had a serial port, I didn't bother to try changing the interrupt from 2 to 3.

Next I tried replacing one of the Compaqs with a Vendex Turbo 888 XT. This is a fairly new compatible, but it didn't solve the problem. I replaced the other Compaq with an Eagle Spirit portable. Nothing. I tried turning off the turbo speed. Nope. Vendex is fairly compatible, but the machine has a pair of built-in game ports that can't be disabled, and I suspected they were conflicting. I tried changing the interrupt, but the workstations still couldn't poll remote machines.

The last machine I tried was another Eagle Spirit. Eagle is long dead, and its machines weren't known for their compatibility even

If you plan to install any network adapters in a compatible computer, there are several precautions that you should take. Be sure that the interrupts, DMA assignments and I/O usage are completely standard. Look for machines that say they are network compatible. Don't expect them to work otherwise.

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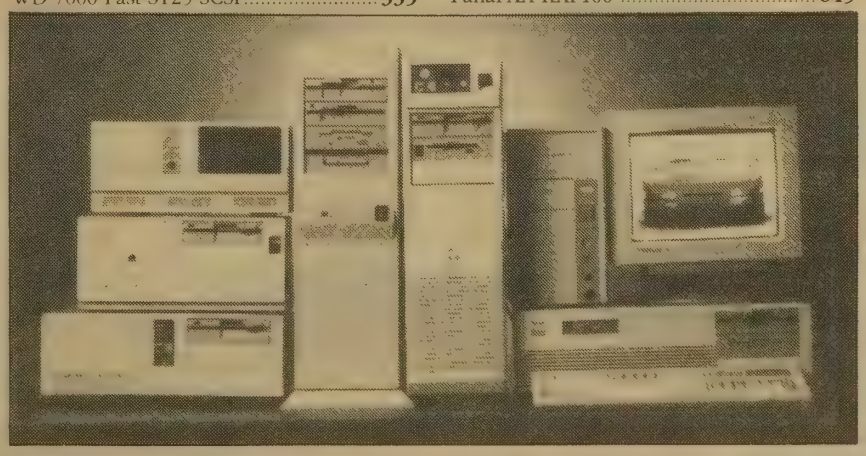

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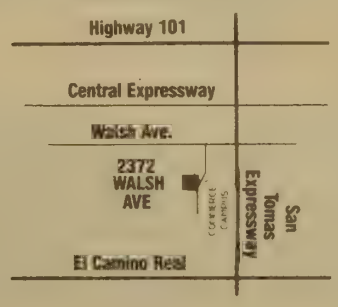

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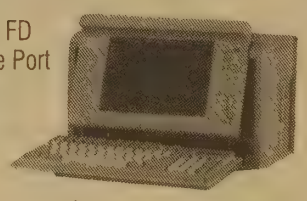

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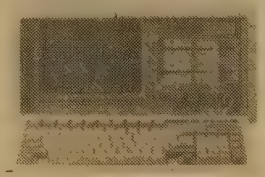

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before the firm's demise. However, both of these machines had a replacement BIOS chip developed by Allen Wilkinson of Wilkinson Micro in Irvine. They make the Eagle compatible enough to run just about anything. I've used them in these and other Eagle machines with complete confidence. But not with these cards. I tried the BIOS in RAM and in ROM, interrupt 2 and interrupt 3. The Eagles couldn't fly. My last shot was a mix of an Eagle and a Compaq, but by then I was whistling in the dark. It was unlikely to help, and it didn't.

A couple of standard IBM PCs could have solved my problems in a minute. That, after all, is what any developer uses to test his product. The boards

If you experience difficulties, the first thing to do is start with bare machines. The more heterogeneous your network is, the more difficult the debugging task is likely to be.

would probably have worked just fine on an inexpensive overseas clone, too; the makers of cheap clones can't afford innovative research, so they copy very carefully.

LEARNING FROM EXPERIENCE

These problems are going to be magnified in more complex networks. If you plan to install these, or any other network adapters in a compatible computer, there are several precautions that you should take. Be sure that the interrupts, DMA assignments and I/O usage are completely standard. Look for machines that say they are network compatible. Don't expect them to work otherwise. Consider every enhancement, every peripheral, and every device you plan to add. Processor speed may be a factor. Scanners, hard disks, CD-ROM drives, tape drives, modems, even extra serial ports, may cause problems.

If you experience difficulties, the first thing to do is start with bare machines. The more heterogeneous your network is, the more difficult the debugging task is likely to be. Once the network is running, add options back into the system until you find the conflict. If it is an essential component, you'll have to either solve the problem or take the device off the network. ■

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The Portable LAN

BY NANCY COMSTOCK

Thanks to the combined communications and connectivity features built into today's portable computers, which allow them to function on nodes on local area networks when linked via telephone to the home office, users are enjoying unprecedented efficiency in outbound operations.

Field sales representatives have long used portable computers to transmit the day's orders back to the home office, and access inventory and shipping information from the company's LAN or mainframe computer. However, non-sales-oriented companies and government installations are also discovering creative applications for this technology, as the experiences of two customers of my client, Altima Systems, attest.

LAPTOP VENDOR ALTIMA FINDS FAVOR IN GOVERNMENT AND REMOTE FIELD OPERATIONS

HIGH TECH JUSTICE

The US Court of Appeals is fast becoming one of Altima's top volume users by equipping its judges in the southeastern United States with Altima One portable computers for their use both in and out of the courtroom. According to Ward Mundy, director of information services for the US Court of Appeals in Atlanta, the laptops have been a boon to the circuit courts' productivity.

Each judicial office consists of a judge, three law clerks, and two secretaries, each of whom uses computers which are networked together. Through the LAN, they are able to share not only voluminous data files, usually WordPerfect documents, but also peripheral equipment including printers.

Typically in an appeals case, three judges sit on a panel to hear oral arguments, a procedure which frequently involves travel to courts in different cities. This necessitates their being on the road a great deal of the time.

The Altima portables allow the judges to directly access the network of AT-class machines in their own or any other similarly-equipped Court of Appeals office.

"The judges are now able to simply unplug their computer and go," Mundy explains. "They have an office on wheels. And, through the use of Altima's built-in modem, judges can link into other networks on the road, as well as to their home office, just as easily as being there."

Prior to the use of laptops, claims Mundy, things were quite different. "When judges traveled, not much got done. Now the offices can remain productive the entire time the judge is gone."

AUDITS TO GO

In the old days, Citibank auditors were sent to corporate sites for up to two weeks at a time, armed with three or four huge binders filled with their previous year's work, business information, and reference material. Today, they simply carry their Altima One portable computers.

The bank has been able to achieve increased efficiency by automating most of the audit process using Altima Systems' computers in conjunction with PC-based mainframe retrieval and risk-oriented audit software developed by Citibank's Audit Division.

Formerly, auditors would tote large quantities of printouts of client data with them; when they required more information they had to rely on phone calls. Many calls involved countless rounds of phone tag, followed by the wait for Federal Express overnight deliveries of the required documents. After they had gathered their audit information in the field, they'd haul it back in to one of their offices for formulation, evaluation, ranking, and report generation.

Now, using their Altima One portable computers equipped with Arcnet cards, auditors are connected to the Audit Division's local area network and can access and examine corporate information from the bank's mainframe before they travel to the audit site.

The reference material which resides on the local area network databases is selected to coincide with the particular audit site's specific business and product specialties, then loaded into the Altima's built-in hard disk. At any time while the auditor is at a site, additional reference material can be retrieved remotely from the audit division's local area network, using the Altima One's built-in 2400 baud modem. Audit reports are now drafted and revised at the site before final issuance.

Bob Kalipetes, Citibank's vice president of the advanced audit technology group, says, "I searched for nine months for the right solution. We needed a box which was sturdy and portable enough for field use. At the same time, it had to double as a desktop unit with a screen and keyboard good enough for seven or eight hours at a time of continual use. We had to have the full 101-key keyboard. We wanted an architecture which could be leveraged into the future, such as the 286 platform, and we had to have the ability to plug into any network. A 4800 baud modem would have been ideal, but Altima's built-in 2400 baud modem is sufficient.

"Being a cost center versus a profit center for Citibank, we had to have a great price/performance ratio. In addition, the fact that the Altima One shipped with the Kodak Diconix printer was a definite plus. The whole package weighs in at about 19 pounds including the printer, but the auditor is used to carrying that around in paper and reference materials anyway!"

Citibank's audit division maintains Banyan Vines local area networks in New York, Harrison, and Toronto. "We've set up these LANs identically so that the auditors can access any of the networks, either to exchange data or to print remotely on any network printer," says Kalipetes. "Of course, we've designed a high level of security into our systems, but the built-in security feature of the Altima One adds a further layer of protection for us."

Another benefit has been the auditors' ability to access Citimail, Citibank's electronic mail system, with connections to 95 countries. Says Kalipetes, "It has sure made a difference to information exchange between time zones. All in all, we've greatly increased the efficiency of the entire audit process." ■

Nancy Comstock is president of Comstock Communications, a public relations firm representing Altima Systems, a Concord-based manufacturer of portable computers. Call Altima Systems at (800)356-9990 for information regarding dealers in your area.

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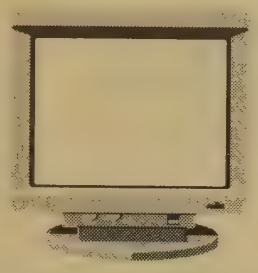

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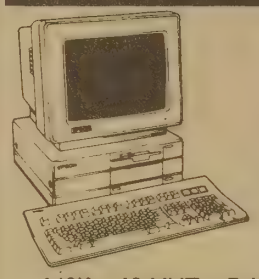

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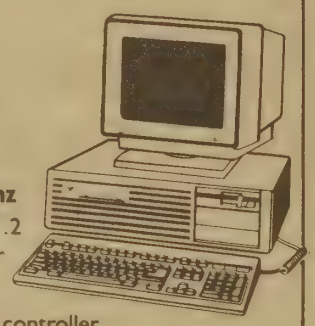

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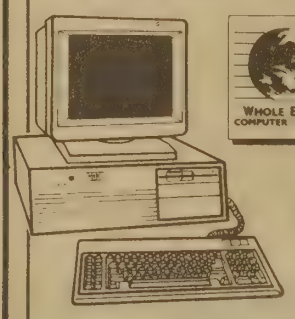

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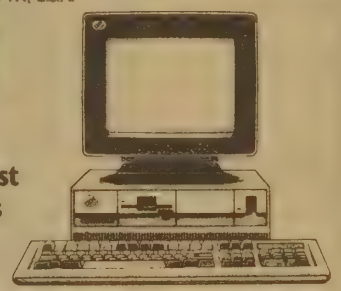

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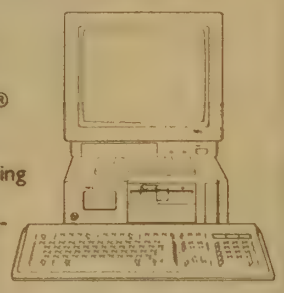

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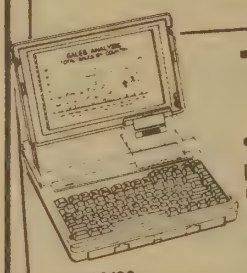

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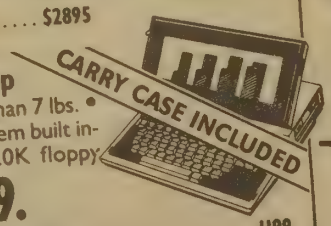

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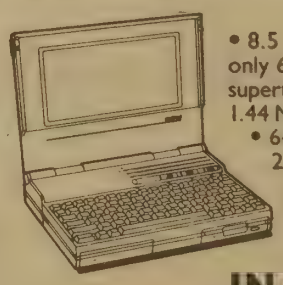

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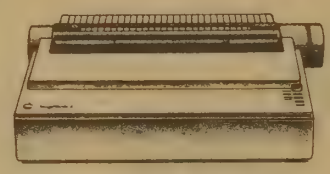

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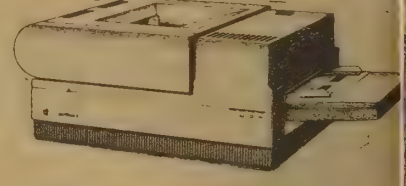

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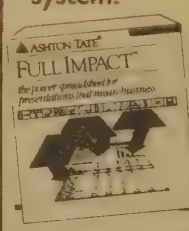

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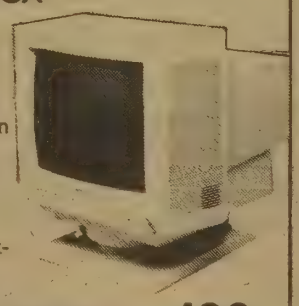

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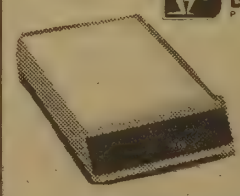

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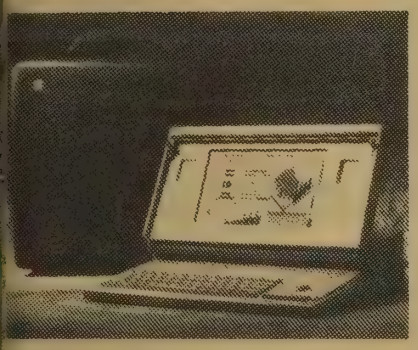

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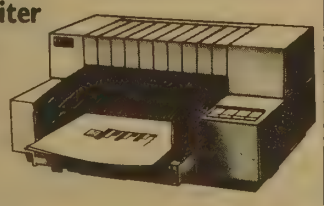

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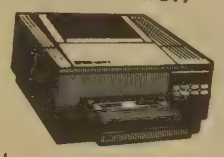

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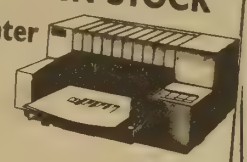

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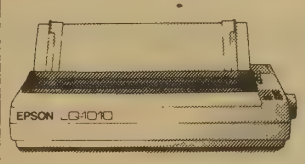

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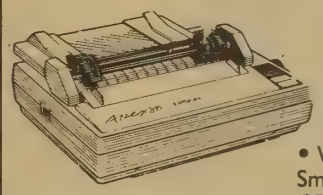

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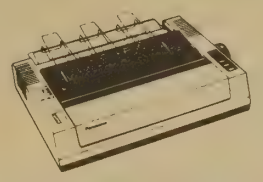

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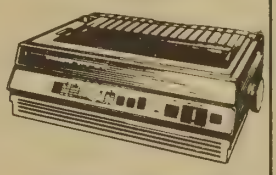

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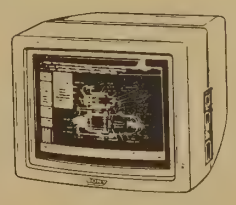

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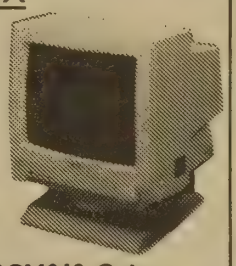

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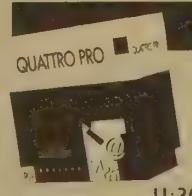

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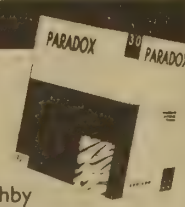

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Lotus Founder And 1-2-3 Designer Mitch Kapor

Interviewed By John Perry Barlow

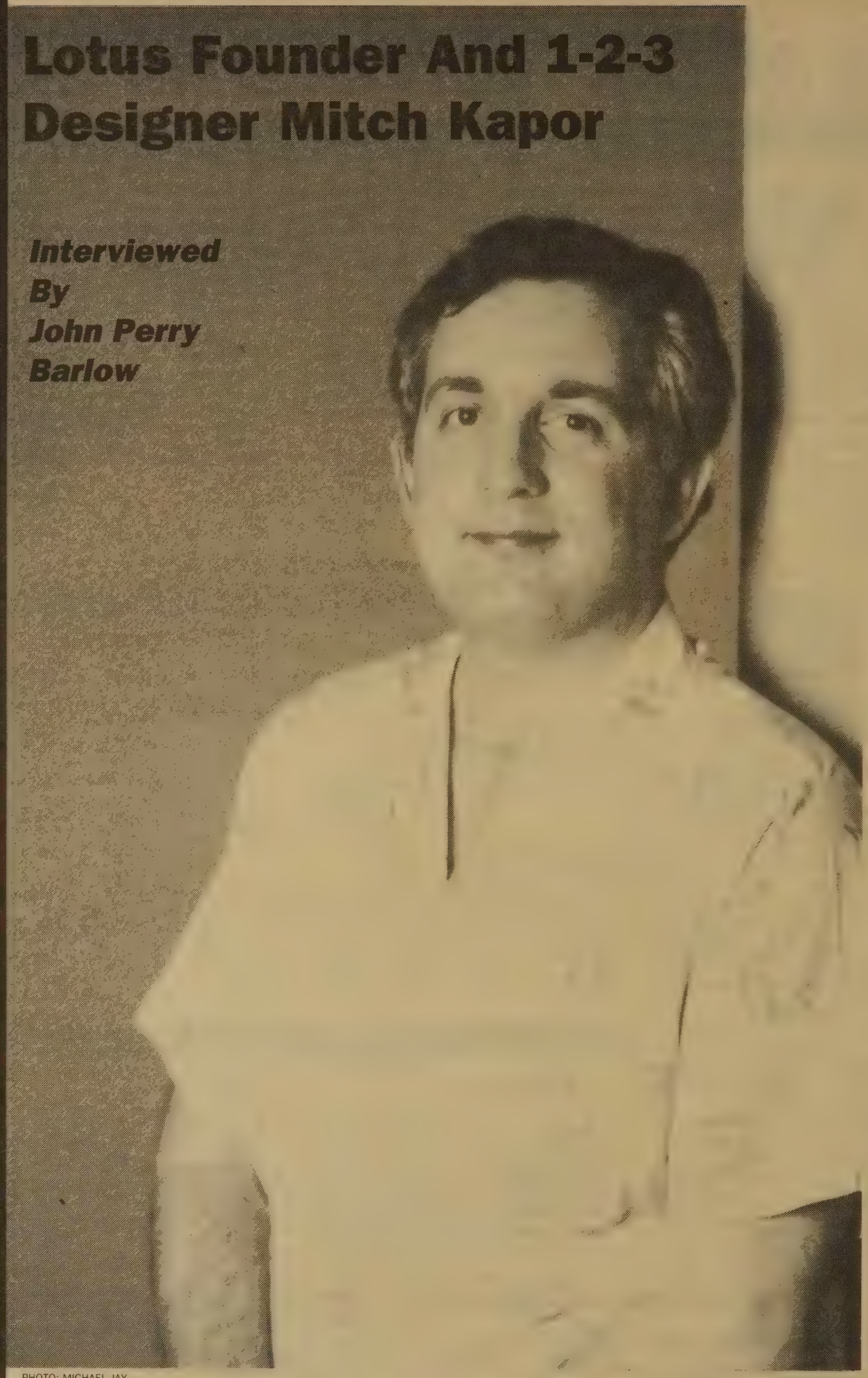

PHOTO: MICHAEL JAY

On entrepreneurship, creativity, software design, Lotus, Microsoft, standards, virtual reality, and various other matters

"When worlds collide!" exclaims Mitch Kapor.

Kapor, founder of Lotus Development, designer of 1-2-3, and currently chairman of ON Technology in Cambridge, Massachusetts, is in town to demo his company's new product, ON Location, at the BMUG meeting later in the evening. He is patiently enduring the gazillionth photo shoot of his career when I explain that this interview might be a little *different*. Kapor's being interviewed by Grateful Dead lyricist John Perry Barlow: creator of the cult classic "Salt Lake City," recent narrow escapee from membership in the Wyoming State Senate, and author of the book-in-progress *Everything You Know Is Wrong*, on the American corporation.

Barlow, for his part, immediately produces a tape from God-knows-where. It turns out to be from a 1975 seminar conducted by mind-scholar Gregory Bateson, in which a participant turns out to be one Mitch Kapor. Kapor, in turn, allows as how a journalist in Boston claims to have a tape of his 1978 standup comic routine; the comedy act drew heavily from Kapor's previous job as a counseling psychologist in a mental hospital.

As you may be suspecting by now, what ensues is indeed not your typical company-profile-type interview. It's a sprawling, no-holds-barred look at what's right and wrong with the personal computer industry—as viewed by one of its chief architects and one of its crankier observers. Sacred cows do not fare well.

These days Kapor's projects include ON, which has the self-appointed mission of creating genuinely great Macintosh products, and efforts to focus attention and creativity on the issue of software design. In a recent article in *Scientific American* (March 1990), he main-

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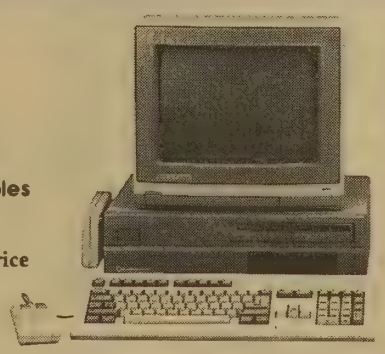

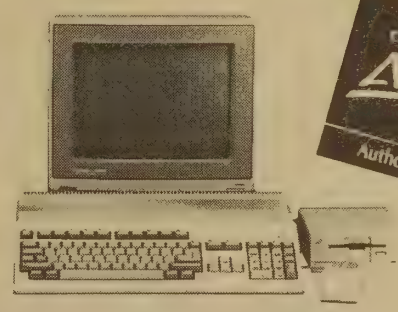

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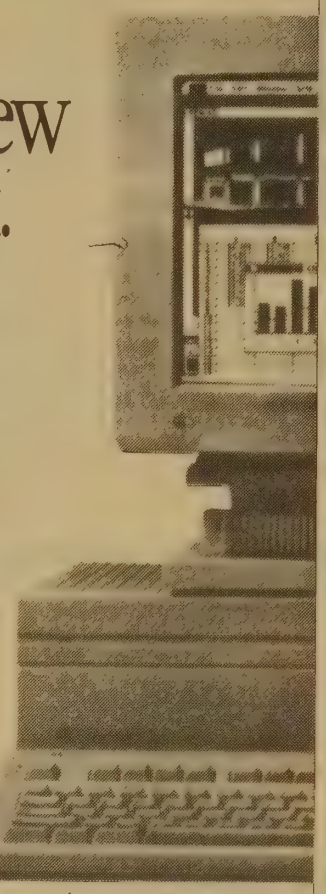

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tains that in the quest for ever-more-powerful tools, the issue of making them useful and functional for human users has fallen by the wayside. There's a growing tendency for software products to be engineering-strong and design-weak, with the result that the people who use the products are rarely able to take full advantage of the power they offer; it's Kapor's contention that software needs designers like buildings need architects if the potential of the high-tech revolution is to become reality.

As part of his efforts to gather like-minded people to discuss software design issues, Kapor recently opened the Software Design conference on the WELL, a Sausalito-based conferencing system. It's already attracted a lively group of programmers, engineers, and interested users to discuss the strengths and weaknesses of current products and tackle the issues involved in making it all work better.

We pick up the Kapor-Barlow conversation amid reminiscences of the dawn of personal computing, as Kapor describes his fateful step of buying an Apple II.

—Mary Eisenhart

Mitch Kapor: The Apple II changed my life.

I'd been really interested in personal computers, since I first heard about them. In fact, I was reading Ted Nelson—I bought a first edition of *Computer Lib* back when he was printing them himself, and I still have it. I discovered him just prowling the bookstores in Harvard Square.

So I was kind of waiting for PCs to happen. I was watching the Altair—but I couldn't solder; I'm not a hardware guy. Finally the Apple II came out, and I said, "This is really cool." I was hanging around in stores. I didn't know anybody who actually owned one, but I was reading *Creative Computing*...

John Perry Barlow: So did you teach yourself BASIC?

I knew a little BASIC, because I'd worked for a year or two as a very junior-level programmer in the early '70s.

I drove up to New Hampshire to buy my Apple II because I couldn't afford it with the sales tax in Massachusetts. The most money I'd ever made in a year was $12,000, and that was in a good year. I was unemployed and I thought I was going to go back to graduate school.

So I bought this Apple II because—I didn't know why I was doing it.

Isn't life funny?

Yeah, but what happened was even funnier. The day after I bought it I was hanging out in a different computer store, and I saw this affluent-looking guy in his forties in this nice suit buying one. I was kind of eavesdropping on the conversation, and it turns out he was an opthamologist, and he was buying a toy, and he didn't know *anything*. I'd already had my machine for a day...

So you were a computer consultant! (cracks up)

I did! I sold myself to him as a consultant! I don't know where I got the nerve to do this, because this is totally uncharacteristic for me.

So for five bucks an hour he hired me on as his BASIC programmer. That's actually how I got started, and I supported myself on that, and I became the first, as far as I know, microcomputer consultant in the Boston area. This was 1978; it was the month Apple shipped their disk drive, so it was still pretty early.

I got a few more consulting clients and started the first Apple users' group east of the Mississippi with a few other people. And that's how I got into PCs—never looked back.

Did Lotus actually develop any software for the Apple II?

Yes. It's a little-known fact that it did. It was a product called Executive Briefing System, which was like a very early predecessor to More or Persuasion or those kinds of things, but on an Apple II.

I wrote a product called VisiPlot before that. Personal Software was the publisher. Software Arts did VisiCalc, and my little company, Micro Finance Systems, did VisiPlot and VisiTrend in a publishing arrangement with Personal Software. So we were like sister companies, Dan Bricklin's company and mine.

VisiPlot was a standalone program that did graphing and was a complete thing unto itself. You could enter data and it would draw different kinds of charts on it.

Could you use it in conjunction with VisiCalc?

They invented something called DIF, Data Interchange Format, which I worked on the design of. The idea for DIF was to make sure that you could exchange data between the two programs. You could make graphs from your spreadsheet.

I arranged for Personal Software to buy out my royalty stream after the product came out, because I was unhappy with the relationship and didn't think that it was going to come to any good end. I took some of that money and started what eventually became Lotus. It was Lotus Development Company for about six or eight months, and we did this thing called Executive Briefing System for the Apple II during that phase.

But when I got venture capital, Ben

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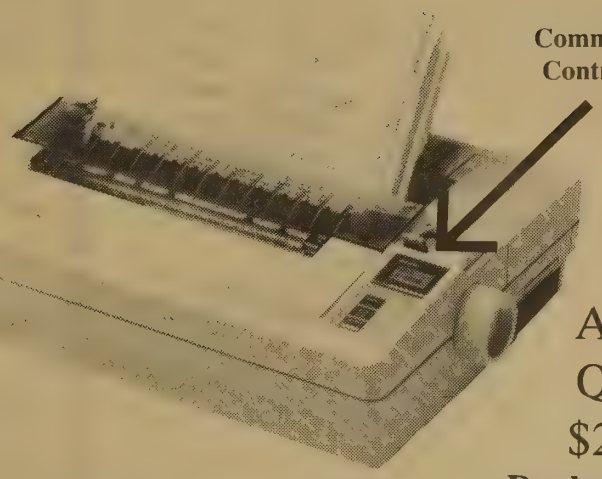

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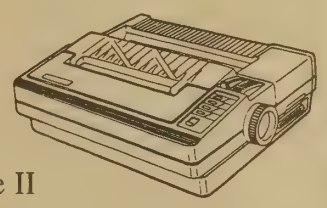

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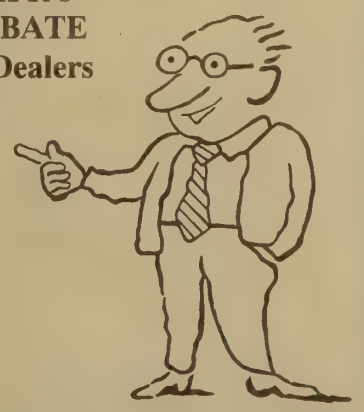

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Rosen and the other people looked at what we were doing and said "We don't think you should be doing this Apple II stuff, it's just tiny compared to the opportunity to do 1-2-3." So we wound up that activity.

I've always been a little curious about the way Software Arts got subsumed.

Well... It was the coda to a tragedy.

Was there ill will?

Not with me.

There was this publishing relationship—Dan Fijlstra had this company out here called Personal Software that later changed its name to VisiCorp. They were the publisher, and Software Arts was the developer. When they signed the original contract, they agreed upon a 35.7% royalty rate, which turned out to be absurdly high given the economics. Nobody really understood the economics of it, and it was uneconomic for personal software to do that.

So they had this situation where the product was selling incredibly well, but there was an inequitable contract. They wound up basically committing mutual suicide, because they could not find a way to disentangle themselves from this bad relationship. There were accusations going back and forth, and a lot of ego.

I was a third party to this. My contract was very similar, but VisiPlot was maybe selling one-fifth to one-tenth as much as VisiCalc.

See, from the Software Arts guys' side, they were raking in a lot of money and it was all pure profit, so they were not very happy about giving some of it up. From Personal Software's point of view, they couldn't afford to keep doing this. What they should've done is gotten a divorce. As painful as it would've been, and as much of a perceived sacrifice as it would've been for each party, they should've said "Hey, in the long run we're both going to be better off if we can find some way to split up."

They didn't do that, and I could see that that probably wasn't going to happen. I started Lotus on the premise that there was going to be a big market for a next-generation spreadsheet that was fast and user-programmable and could use a lot of memory. I offered the idea to both parties, and neither was interested in it.

So you basically designed Lotus 1-2-3 personally?

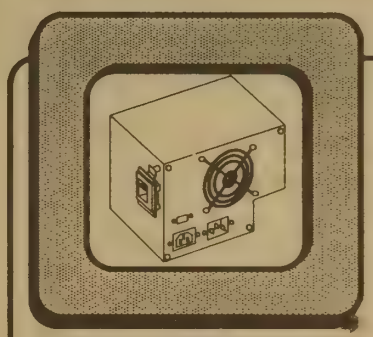
Yes.

Jon Sachs and I teamed up, and he wrote all the code. He had written a spreadsheet for the Data General minicomputer, and he'd been in a partnership that hadn't worked out well. So when he and I started working together, he had rights to this

"I drove up to New Hampshire to buy my Apple II because I couldn't afford it with the sales tax in Massachusetts. The most money I'd ever made in a year was $12,000, and that was in a good year. I was unemployed and I thought I was going to go back to graduate school."

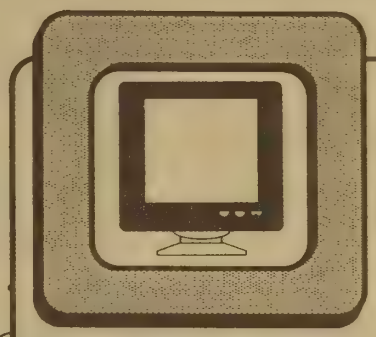
Add-on Cards

- 16-bit VGA card
- AT I/O card
- MGP card



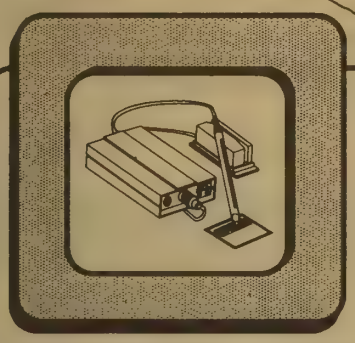
Power Supplies

- PS - 6220 220W
- PS - 200 200W
- PS - 180 180W
- PS - 150 150W



Monitors

- Super VGA
- VGA
- EGA
- CGA
- Monochrome (Amber/Paper white)



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- Decoder
- Slot reader
- Wand
- Bar code printing software

BTC

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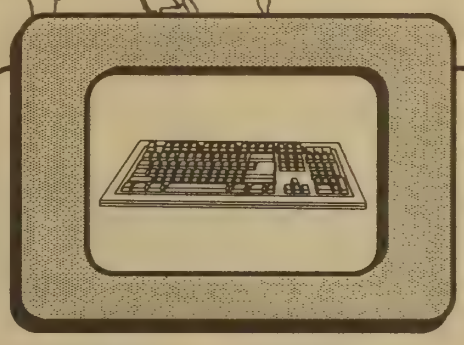
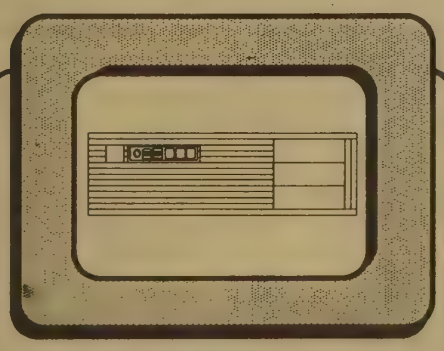


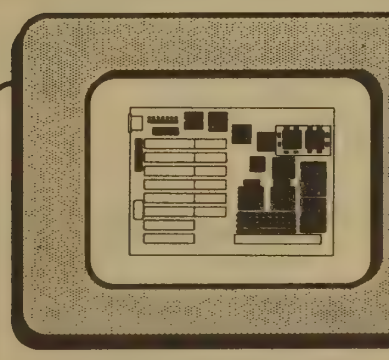
Keyboards

- 5339 102 - key
- 5339R 102 - key tactile feedback
- 5060 84 - key
- 5349 European languages, Cyrillian keyboard



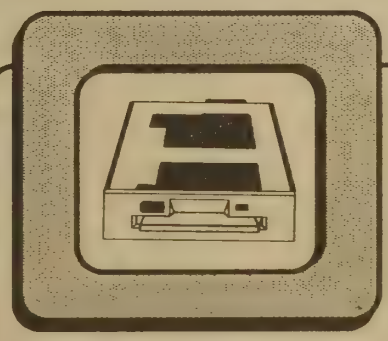
Cases

- Full size AT case (5 bays)
- Small size AT case (3 bays)
- Mini size AT case (3 bays)
- Tower case (6 bays)
- Mini tower case (4 bays)



Motherboards

- 286 - 12MHz (up to 4MB)
- 386SX - 16MHz (up to 4MB)
- 386 - 20MHz (up to 8MB)
- 386 - 25MHz (up to 16MB)
- 386 - 33MHz (up to 16MB)
- 486 - 25MHz (up to 16MB)



Floppy Drives

- TEAC 360KB
- TEAC 1.2MB
- TEAC 1.44KB
- FUJITSU 360KB
- FUJITSU 1.2MB
- FUJITSU 1.44KB

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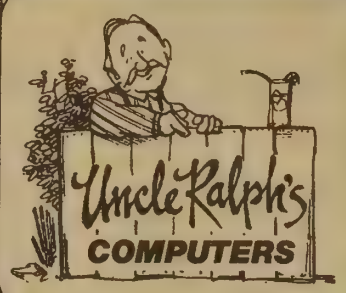

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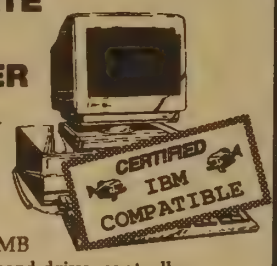
This complete computer system has everything you need to get started for a super low price. Includes monitor, DOS 3.3, and 640k RAM. Backed by a 1 year parts and labor warranty.

MAGNAVOX

COMPLETE SYSTEM $499

DTK 12 MHz, ZERO WAIT-STATE 286 COMPUTER



This IBM compatible runs at 12MHz and comes complete with serial and parallel ports, 1.2MB floppy drive, 1:1 hard drive controller, 640K RAM, 1 year warranty, and Uncle Ralph's outstanding commitment to customer satisfaction. Monitor & card sold separately.

$35 A Month*

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The flexibility and future compatibility of 386 computing with some special enhancements by DTK. System includes 1MB RAM, serial and parallel ports, baby desktop case, 200W power supply, keyboard, 1.2 MB floppy drive, and 1:1 hard/floppy controller. Monitor & card sold separately.

ONLY $999

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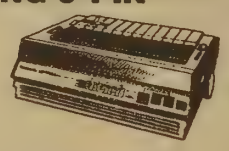
PANASONIC'S OUTSTANDING 9-PIN PRINTER

$178



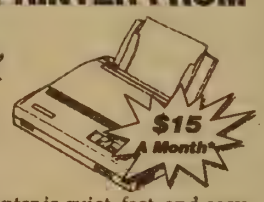
Panasonic

Here's a great buy on our most popular printer. Delivers excellent "near letter quality" print, and zooms along at 192 CPS in the draft mode. Includes automatic tractor feed with paper parking. 2 year warranty!

OUR NEW 24-PIN LETTER QUALITY PRINTER FROM STAR

STAR MICRONICS

$299



$15 A Month*

This great new printer is quiet, fast, and easy to use. Plus it delivers "letter quality" print in 5 different typefaces, and it has a big 7k buffer.

THE HP DESKJET PRINTER MAY BE FOR YOU!

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Hewlett Packard's popular deskjet is faster than a dot matrix printer and delivers near laser quality output, but at a fraction of the cost of a true laser printer.

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PANASONIC WIDE CARRIAGE 24-PIN LETTER-QUALITY PRINTER

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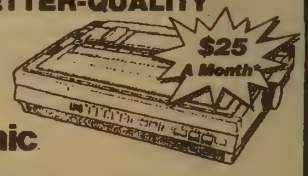
$25 A Month*



Panasonic

Here's a great buy on an outstanding wide carriage printer. It's easy to use, has excellent "letter quality" print, and an automatic tractor feed with paper parking and self loading. 2 year warranty!

LAPTOP COMPUTERS

TOSHIBA LAPTOP COMPUTER

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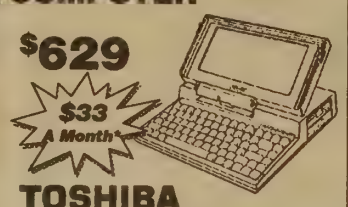
$33 A Month*



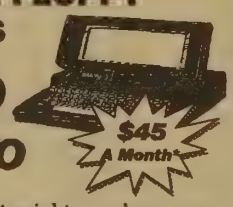
TOSHIBA

This tiny laptop weighs just a few pounds, but it does alot of work. Runs on battery or AC and comes complete with AC adaptor/battery charger, and DOS.

SANYO LAPTOP WITH 2 FLOPPY DRIVES

$899

$45 A Month*



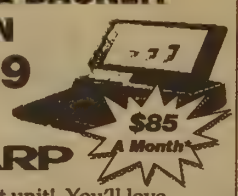
SANYO

Sanyo's lightweight wonder comes standard with 640k/RAM and two floppy drives for greater power and ease of use. Package includes rechargeable battery, AC adaptor, and MS-DOS.

SHARP LAPTOP WITH 40MB HARD DRIVE & BACKLIT SCREEN

$1699

$85 A Month*



SHARP

What a great unit! You'll love Sharp's terrific keyboard and super bright screen, plus it comes complete with battery, charger, and MS DOS.

EPSON'S TERRIFIC 286 LAPTOP COMPUTER

$1,999

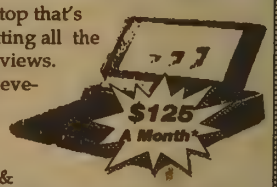
$100 A Month*

EPSON

This is the perfect laptop if you're willing to sacrifice a little extra weight for a terrific keyboard, lots of power, and a super screen. Includes 20 mb hard drive, big backlit screen, battery and AC adaptor.

SHARP 286 LAPTOP W/ 40MB HARD DRIVE, VGA SCREEN & MODEM

$125 A Month*



The laptop that's been getting all the great reviews. You get everything including modem & calculator pad. You'll love the bright VGA screen and the keyboard's feel. (Battery and charger included)

SHARP $2,499

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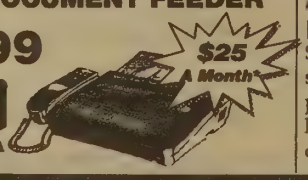
Transmit and receive documents from around the world. Built in telephone, copier and 5 page document feeder.

$499

$25 A Month*



MURATA

A SPEEDY SHARP FAX MACHINE THAT DOES HALFTONES

Send & receive in a mere a 15 seconds per page. Plus it has a 5 page document feeder, 16 level halftones, & automatic fax/phone changeover.

$30 A Month*

SHARP $599

SHARP FAX WITH PAPER CUTTER

Automatically cuts each page received, and this unit has a document feeder, halftones, automatic phone/fax switching and 30 number memory.

$44 A Month*

SHARP $849

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DTK 20 MHz 386 COMPUTER WITH 40MB HARD DRIVE & MONITOR

Here's the speed without the price. 20MHz 386 CPU with small footprint case and 1.2MB floppy, complete with 1MB RAM, serial and parallel ports, 1:1 hard drive controller, 40MB hard drive, monitor, and enhanced keyboard.

$60 A Month*

ONLY $1,599

UNCLE RALPH'S/MYLEX 386SX WITH 45 MB HARD DRIVE, 2MB RAM & VGA COLOR MONITOR

You'll love this computer as soon as you use it! It's dependable, & very fast, plus, you get the best keyboard you have ever touched, a superbly crafted "accu-fit" case, parallel and serial ports, 2 MB RAM, a 40 MB hard drive, VGA color monitor, and Uncle Ralph's helpful support and service.

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$95 A Month*

UNCLE RALPH'S/MYLEX 386/ 20MHz WITH STATIC RAM CACHE, 40MB HARD DRIVE & VGA COLOR MONITOR

$115 A Month*

Designed to satisfy the most demanding users and incorporates many special refinements that we've added to enhance performance. Includes our terrific "accutouch" keyboard and elegant "accu-fit" case, plus 1MB RAM, 1.2 MB floppy, game, parallel, and 2 serial ports, VGA card & color monitor. 1 year Warranty, 2 years on the motherboard.

COMPLETE SYSTEM $2,295

UNCLE RALPH'S/MYLEX 25MHz 386 WITH STATIC RAM CACHE, 68 MB HARD DRIVE, & SUPER VGA COLOR MONITOR

Here's our best business class computer! It improves performance by 20% over most other 386 designs with a special caching technology that actually anticipates what files you will want to use next. The complete system includes our terrific "accutouch" keyboard and elegant "accu-fit" case, plus a megabyte of RAM, 1.2 MB floppy drive, game, parallel,and two serial ports, VGA card and color monitor. 1 year Warranty, 2 years on the motherboard.

COMPLETE SYSTEM $2,595

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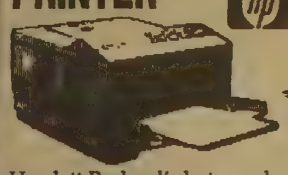
PRINTERS FOR EVERY JOB

HP'S BUDGET LASER PRINTER

HEWLETT PACKARD



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THE BEST LASER PRINTER VALUE WE'VE EVER SEEN!

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Everex delivers the sharpest image of any laser printer we carry. It's inexpensive to run, comes with a built in envelope feeder, 132 fonts, and 90 day on site service, and has HP laserjet II, IBM, and Diablo emulations.

BROTHER'S TOP-RATED POSTSCRIPT LASER PRINTER

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Here's the terrific laser printer that's been getting all the top reviews. It's particularly fast and is great for all serious desktop publishers. Comes with 3 MB RAM, 35 built-in fonts, and an unbelievable image.

brother

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HEWLETT PACKARD

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MODEMS

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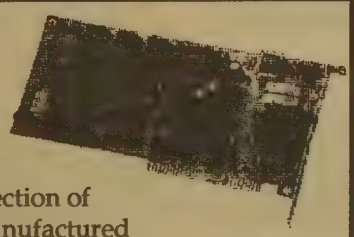

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286 16MHz	*call for best price*
386SX	*call for best price*
386 20MHz w/cache	*call for best price*
386 25MHz w/cache	*call for best price*

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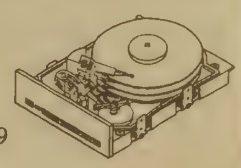
View Perfect hi-res VGA	$429
Panasonic Panasync VGA	$499
NEC 3D	$635
View Perfect 1024X768 Multi-VGA	$569



Miniscribe 20 MB $219
Seagate 40MB ST251-1 $329
Toshiba 44/68 MB $429
Microscience 40 MB, 28 MS $369
Toshiba 80/110MB RLL $699
Micropolis 338MB ESDI w/controller $1,695

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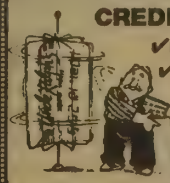

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4/10 MHZ MOTHERBOARD
LANDMARK 12 MHZ
640K RAM MEMORY
MULTI I/O S. P. G. & CLOCK/CAL
360K FLOPPY DRIVE
FLOPPY CONTROLLER
101 ENHANCED KEYBAORD
HERCULES COMP. VIDEO
12" AMBER MONITOR T&S
AT STYLE CASE W/LEDS
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$409 BASE SYSTEM

DCP 8088-10

	MONO	EGA	VGA	MULTI SCAN
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42 MB	789	979	979	1349
80 MB	819	999	999	1369

DCP 80286-12 DESKTOP SYSTEM

6/12 MHZ MOTHERBOARD
LANDMARK 16 MHZ
512K RAM EXPANDABLE TO 4 MEG
CLOCK & CALENDAR
HD/FD CONTROLLER
1.2 MB FLOPPY DRIVE
101 KEY KEYBOARD
I/O CARD S. P. & G. PORTS
HERCULES COMP. VIDEO
12" AMBER MONITOR T&S
AT STYLE CASE W/LEDS
200 WATT POWER SUPPLY

$589 BASE SYSTEM

DCP 80286-12

	MONO	EGA	VGA	MULTI SCAN
20 MB	749	1099	1099	1309
42 MB	929	1269	1269	1489
80 MB	979	1319	1319	1529

DCP 80286-16 DESKTOP SYSTEM

6/16 MHZ MOTHERBOARD
LANDMARK 21.4 MHZ
1 MEG RAM EXPANDABLE TO 8 MEG
CLOCK & CALENDAR
HD/FD CONTROLLER
I/O CARD S. P. & G. PORTS
1.2 MB FLOPPY DRIVE
101 KEY KEYBOARD
HERCULES COMP. VIDEO
12" AMBER MONITOR T&S
AT STYLE CASE W/LEDS
200 WATT POWER SUPPLY

$699 BASE SYSTEM

DCP 80286-16

	MONO	EGA	VGA	MULTI SCAN
20 MB	869	1219	1219	1429
42 MB	1049	1399	1399	1609
80 MB	1099	1449	1449	1659

DCP 80386SX-16 DESKTOP SYSTEM

6/16 MHZ MOTHERBOARD
LANDMARK 20.7 MHZ
1 MEG RAM EXPANDABLE TO 8 MEG
CLOCK & CALENDAR
1 TO 1 HD/FD CONTROLLER
I/O CARD S. P. & G. PORTS
HERCULES COMP. VIDEO
12" AMBER MONITOR T&S
1.2 MB FLOPPY DRIVE
101 KEY KEYBOARD
AT STYLE CASE W/LEDS
200 WATT POWER SUPPLY

$859 BASE SYSTEM

DCP 80386SX-16

	MONO	EGA	VGA	MULTI SCAN
20 MB	1019	1369	1369	1579
42 MB	1199	1549	1549	1759
80 MB	1239	1589	1589	1799

DCP 80386-20 DESKTOP SYSTEM

6/20 MHZ MOTHERBOARD
LANDMARK 24 MHZ
1 MEG RAM EXPANDABLE TO 8 MEG
CLOCK & CALENDAR
1 TO 1 HD/FD CONTROLLER
I/O CARD S. P. & G. PORTS
HERCULES COMP. VIDEO
12" AMBER MONITOR T&S
1.2 MB FLOPPY DRIVE
101 KEY KEYBOARD
AT STYLE CASE W/LEDS
200 WATT POWER SUPPLY
FOR 25 MHZ CPU ADD $75

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thing that he'd done. It was written in whatever the proprietary language was on this minicomputer.

So the first thing he set out to do was rewrite it, just to get it into an environment where we could work with it. He rewrote it in C for a 64 K Z-80 machine. This was in the beginning of the summer of '81.

But in the summer of '81 the IBM PC was announced, and that really changed our thinking a lot. I thought we should make that the target environment. It had a 16 bit processor, 640 K, faster, bigger. And I thought IBM was going against their whole tradition, breaking tradition, which I liked, and saying, "Well, we'll go through ComputerLand and Sears. We won't sell it ourselves. We'll use outside software because we don't know how to build software for this thing..."

And I said, "Gee, somebody at Armonk must know something."

Turns out it was somebody in Boca Raton that knew something...

With a godfather in Armonk named Paul Rizzo, who many times prevented it from being killed.

IBM was the golden name in corporate America, and I could see where this thing was going, so I said, "Why don't we bet on that?"

The problem was, we knew that writing it in C wasn't going to cut it because it was too slow, so we had to write it in assembly language. If you can believe this, there was no assembler available for the IBM PC until January '82. We had about five months where we really couldn't do any development, so we did a lot of design work. Sachs kept working on the Z-80 version, and the day we got the assembler he went off and started re-implementing the spreadsheet for the sixth time.

When you were designing the interface, that was as much your doing as anybody's?

It's funny, I just had to go through reconstructing exactly what happened when because I was testifying in a lawsuit.

A look-and-feel lawsuit?

Yeah, I was called in as a fact witness, because the defendants were claiming, among other things, that there's no originality in 1-2-3, that it was really just a knockoff of VisiCalc.

Well, it turns out that I'd saved all of my notes—I was quite compulsive about keeping a full written record. All that stuff got carted off in boxes to the attorneys three years ago when the suit was filed by Lotus—which was after I was no longer there full-time, but I was still on the board.

In the course of preparing for this, I went through the hundreds of pages of my original notes, and I created this affidavit which is available now, I guess, as part of the public record. So I'm now more refreshed about who did what.

The basic concept of doing a fast, programmable, with-macros, spreadsheet with graphing was my concept. Most of the feature design was mine, although Jon did a bunch of working out the graphing functionality.

We didn't agree on the menu until the very end. We had about 48 different abortive attempts to come up with a menu, and finally Sachs said, "Look, let's build the functionality in and worry about the menu at the end." We really did the menu of it by committee—I was the chairman of it, but by that time we had five or six people figuring out how we were going to group the commands. We tried a whole bunch of different alternatives until we found something that we liked.

It must have been something of a gamble to want to put graphics in that program at that point, though. It seems to me that it was a long time before you saw very many graphic monitors for PCs.

Well, I don't know. Because I had done VisiPlot, it seemed like a complete no-brainer.

That's where the actual idea for the product came to me originally—I was sitting there in VisiCalc, with a spreadsheet. I think I was trying to calculate my future royalties (laughs), because VisiPlot hadn't shipped yet.

I wanted to make a graph. There was a way of doing it using DIF, but it was unbelievably cumbersome, because you'd have to go through and mark out a range, and then save it to disk, quit out of VisiCalc, *reboot your machine*—because VisCalc was copy protected and when you quit they wouldn't let you quit to the operating system. You actually had to reboot, startup, fire up VisiPlot, load it all in, open up the file, load it in, specify the graph—it took five minutes.

I said, "There's got to be a better way. I've got the numbers right here—why isn't there a Graph command?" That's when I had some discussions both with Bricklin and the people at Personal Software about this, and I guess they felt that I was trying to encroach on their thing.

IBM had this stupid solution originally—you either had a monochrome monitor with no graphics, or very low quality graphics. And Hercules came out with this thing that did both.

And Compaq. When I first got a copy of Lotus, I had a Compaq portable, and to me it was the only machine that would run Lotus right.

Yeah, I think in a small way 1-2-3

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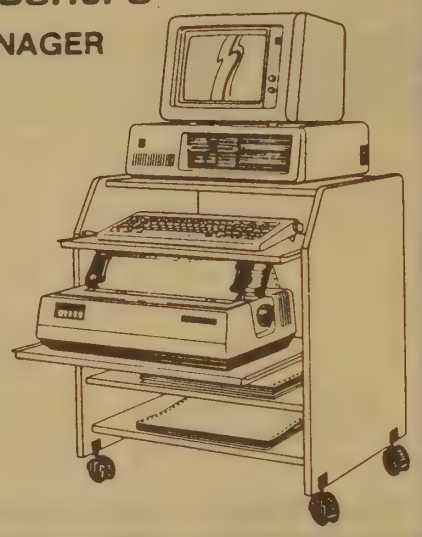

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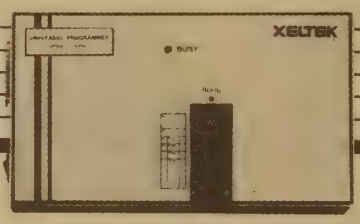

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may have sounded the death knell for the character-only video display.

You have an interesting quote in Scientific American (March 1990): "The problem of making computers useful to people as communications and information devices is not an engineering problem, it's a design problem. Engineers are trained to eliminate the subjective factors, but it's exactly the subjective factors that are critical here."

That just seemed like a very important thing to say. I thought it was good coming from you, because there's an irony here in the sense that Lotus, I think, has hung up interface design in a way. Would you agree that that's true?

I think so.

There is, in business, an addiction to Lotus that has made it very difficult for people to move on to the next step.

There are a lot of reasons why people haven't moved on to the next step. That's true, but I'm not sure which direction the causality flows.

I don't think you can get people to switch away from Microsoft Word for the Mac any more easily than you can get them to switch from 1-2-3. It's a fact that whatever establishes itself first as the standard, and also whatever can't really be improved on for a given quantum of computing power, sort of tends to drag everything down.

In the issue of Scientific American right before this one, the economist talks about positive feedback modeling, in which he says basically that it's against the laws of classical economics, but now you have positive feedback loops where the first product, if it establishes a clear lead in the beginning, is a strange attractor.

Well, if there's something with enough energy to essentially push the electron to the next orbit out, it has to have critical mass. It's typically like bumping up to the next platform. So if and when OS/2-PM ever becomes, if not the dominant OS, a major player, you'll be able to do things with that that you just plain can't do now, and someone'll figure out how to take advantage of that.

But even that might not be enough. We're still using the Scholl's keyboard on the typewriter.

To put the design thing in perspective, I think when I was doing 1-2-3 I was designing software, and I knew I was designing software, but I didn't think of myself as a software designer. Mostly I just felt awkward and out of place, because all of the other technical people who were making contributions were these people who did very heavy programming.

You've got to remember, Bill Gates got started by writing Altair BASIC;

"When I got venture capital, Ben Rosen and the other people looked at what we were doing and said, 'We don't think you should be doing this Apple II stuff, it's just tiny compared to the opportunity to do 1-2-3.' So we wound up that activity."

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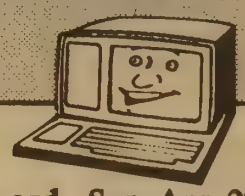

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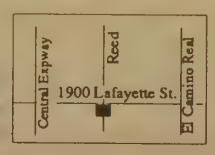

he was in there with the bits and the bytes. Bricklin did a lot of very heavy duty technical stuff, and so on down the line. So I thought that somehow I was a second-class citizen, because I couldn't write code the way they could write code.

But Gates turns out to be the exception in this business. The code writers very rarely maintain control of their companies.

Well, they turn out not to be the entrepreneurs, but at that time nobody knew that.

So I just felt weird about it, and left out, and kind of the outsider. It was only in thinking about it over the next seven or eight years that I finally came to the conclusion recently that there is this other professional role called software designer that we just haven't gotten around to recognizing and making legitimate.

But if you look at other things like industrial design and graphics design, what architects do for buildings, software designers should do for software. It's just a mark of the relative youth and immaturity of the software business that it hasn't happened. So I said, "Oh, okay, that's what I am. I bet there are other people like that. Why don't we spend some time thinking about what we ought to do with ourselves?"

So that's the idea for the talks I've been giving, and for this [WELL] conference. The conference has several goals. One is to serve as a forum for ideas where people can talk about this stuff and bounce ideas off each other, try to identify what are some of the major issues having to do with the identity of the field, how design is related to programming, and so on.

The second thing is as a kind of opportunity for people who are designers to meet each other, to kind of come out of the closet, to do some networking, some consciousness-raising, really.

And then the third thing is to eventually do some kind of organizing. I don't know what that's going to be; ultimately it might be some sort of professional society. But I think there's some very practical issues. If you want to do good programming, there are millions of books to read, there are courses to take, there are role models to follow. There's 40 million magazines to read, and things like that.

If you're a designer, there's no institutionalized stuff. There's no workshops, no conferences, no periodicals. Everything happens very informally, and I think the whole process and the software that gets made could benefit from some conscious attention to this stuff. I'd like to see, over a period of years, courses, books, training, ways that people who want to actually design things can learn how to do that in a less haphazard fashion.

"If you can believe this, there was no assembler available for the IBM PC until January '82. We had about five months where we really couldn't do any development on 1-2-3, so we did a lot of design work."

There's a lot of work to be done there, and it's not just in computers. You look at the interfaces you have to deal with in every element of your life. It takes a rocket scientist to deal with a VCR at this point.

That's one of my favorite points in the talks that I give—if you think computers are bad, look at consumer electronics. Everybody has a VCR, and half of them just blink "12:00" "12:00" because nobody can figure out how to set the clock.

The reason consumer electronics are even worse than computers has to do with the fact that PCs have open architectures and consumer electronics have closed boxes. What that means is that if I can figure out how to make a computer easier to use, in the course of doing something, I can start a software company. And maybe it succeeds and maybe it doesn't, but at least I have the opportunity to do that.

So what we've seen is tens of thousands of people start software companies, and there's a very harsh Darwinian evolution. Most of them fail because their ideas and their execution are not sufficiently well-received, so they die out. But a few things succeed, and those are the ones that are imitated very broadly. And so by virtue of all of this effort that's taking place in the market, the platform provider, like an Apple or an IBM or whoever, doesn't have to worry. They don't have to do the R&D to figure out

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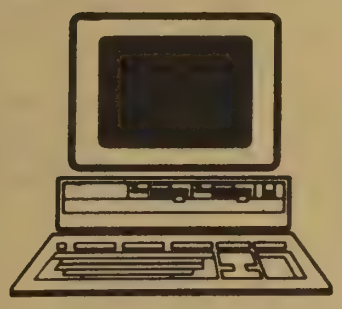

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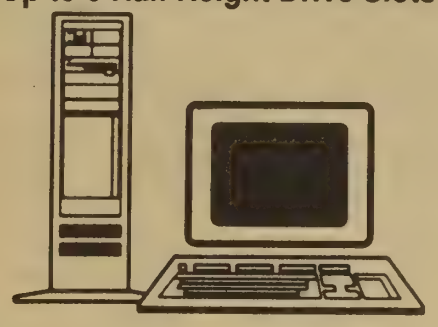

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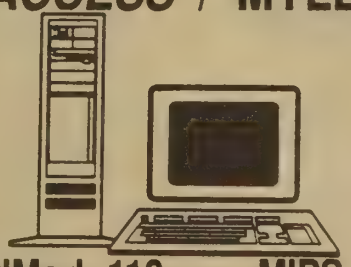

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- 800 Line Items to choose from!!

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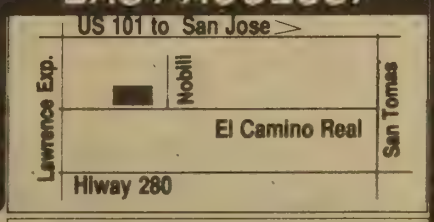

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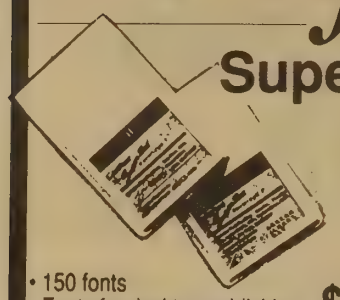
COMPUTER PERIPHERALS, INC.™

FUJITSU

JETWARE™



SuperSet

- 150 fonts
- Fonts for desktop publishing
- Vertical & horizontal formats

$249

Z_1

NEW

TmsRmn & Helv for Microsoft™

- Compatible w/ all LaserJet printers
- For MicroSoft Word & Windows
- 17 fonts

$129

B- BOLD

Helvitica & TmsRmn

- Contains 6 character fonts
- Bold & italic fonts
- 5 year warranty

$79

F- MEDIUM

Helvitica & TmsRmn

- Compatible w/ HP "F" cartrige
- Enhanced text appearance
- For all LaserJet printers

$89

P- TmsRmn P&L

- 3 horizontal & vertical fonts
- Works w/ most word processors
- Clear, consistent and accurate

$99

T- TAX FONTS

- 7 fonts, including Tax Line Draw
- Ideal for Tax recording
- Includes 6-14pt.. Helv.

$79

4-IN-1

- HP equalivent fonts: A, C, D, E
- Additional characters for legal correspondence
- Own internal memory

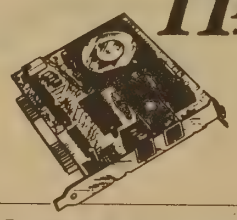
$109

12/30 - SPREADSHEET

- Works with Lotus 1-2-3, dBase, Symphony
- 6 font sizes
- Prints horizontal or vertical formats

$129

HIGHFIDELITY™



2 YEAR WARRANTY

2400BD INTERNAL MODEM

$79

JetMemory for HP LaserJet

Series	1MB	2MB
III	$249	$329
IIP	249	329
II	169	269

RX7100 Laser Printer

$849

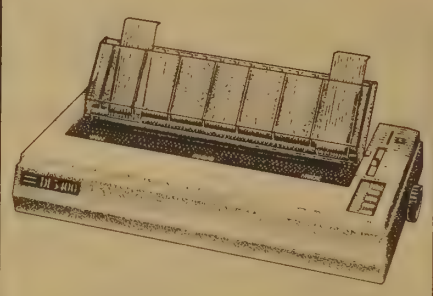
- 640K
- HP Emulation
- 2 paper bins
- 5 pages per minute
- Upgradeable to PostScript
- Use letter or legal paper in same tray
- HP equivalent Font Library available

RX7100PS PostScript

- 2MB memory
- 35 ADOBE fonts
- HP II emulation
- APPLE & IBM compatible

$2699

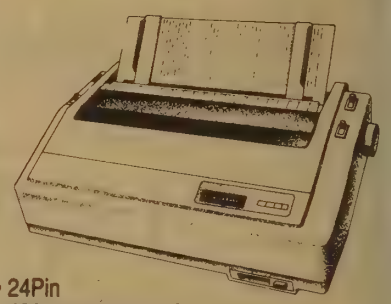
DL3400



- 24Pin
- 288cps; 72cps LQ
- Color upgradeable

$449

DL5600

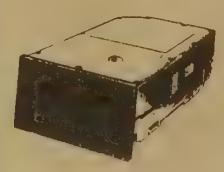


- 24Pin
- 486cps; 162cps LQ
- Does 8 part forms
- Multiple emulation
- 4 LQ fonts
- Paper park

CALL

M2263 778MB

5 YEAR WARRANTY!



- 16ms
- 200,000 hour MTBF
- Available in ESDI or SCSI

CALL

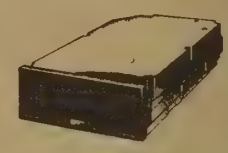
M2249 389MB

HIGH RELIABILITY!

- 18ms
- Available in ESDI or SCSI

$1495

M2614 182MB Formatted



- 25ms
- AT interface

$995

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FAX 247-4448

VISA NOW thru MAY 17th

- **Million dollar inventory!!**
- **800 Line Items to choose from!!**

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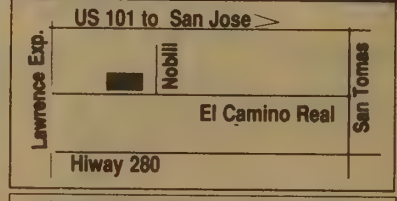

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An Authorized EPSON Reseller & Service Center
...with up to **3 Year Warranty** Available!

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YOU'VE GOT A LOT OF COMPANY.™ **EPSON®**

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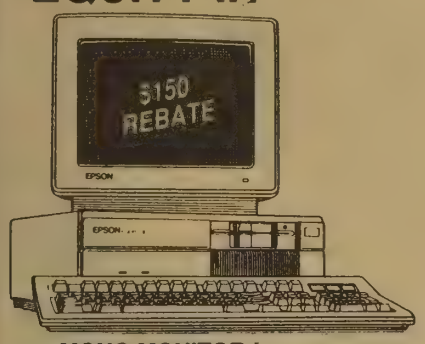
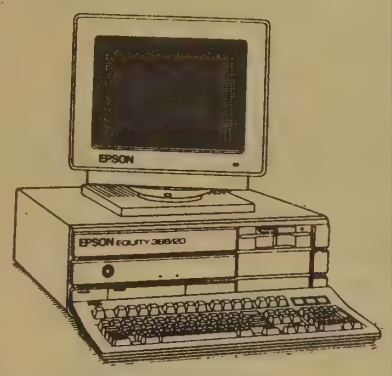


MONO MONITOR !

- 80286 dual-speed 8/12 MHz microprocessor
- 640KB RAM memory, expandable to 15.5MB• 1.2MB Floppy Drive, DOS 3.3
- Serial & parallel clock calendar
- Remarkabl compact design
- One year limited warranty

ACCESS PRICE $1099
LESS EPSON REBATE 150
949

EQUITY 386/20



- Powerful 20MHz 80386 microprocessor
- 1.2 MB floppy disk drive
- 1MB RAM is expandable up to 16MB via SIMMs
- Ideal as a network file server
- 8 I/O slots available
- One year limited warranty

CALL

EPSON-to-MAC

Printer Interface & Software
Use your **EPSON** 24 Pin Priter with your **MAC**

$49

EPSON is a registered trademark of Seiko EPSON Corporation. Equity is a trademark of EPSON AMERICA, INC.

EQUITY LT-286e

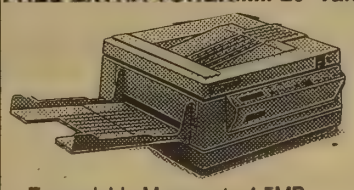
- 12MHz 80c286 microprocessor
- MS-DOS 4.01
- "Paper white" display
- 1MB RAM...expandable to 2MB
- "Pop-out", 20MB hard disk drive...interchangeable with optional 40MB
- 3.5", 1.44MB FDD

$2695

40MB also available

EPL-6000
AFFORDABLE LASER PRINTER

FREE EXTRA TONER.....$29 value!

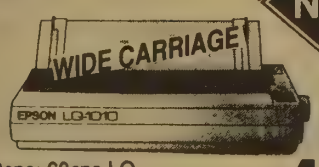


- Expandable Memory to 4.5MB
- 6 Pages per Minute
- 6 Resident Fonts
- 300 x 300 dpi

$999

LQ-1010 *24-Pin*

New!

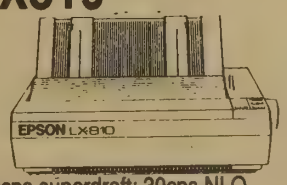


- 180cps; 60cps LQ
- 360x360 dpi
- Easy-to-use front control panel

$499

LQ510 180cps; 60cps LQ
360 x360 dpi **$325**

LX810



- 200cps superdraft; 30cps NLQ
- Easy typestyle selection
- Versatile paper handling
- Quick typestyle & function selection

$189

Panasonic

An Authorized PANASONIC Reseller & Service Center
...with up to **3 Year Warranty** Available!

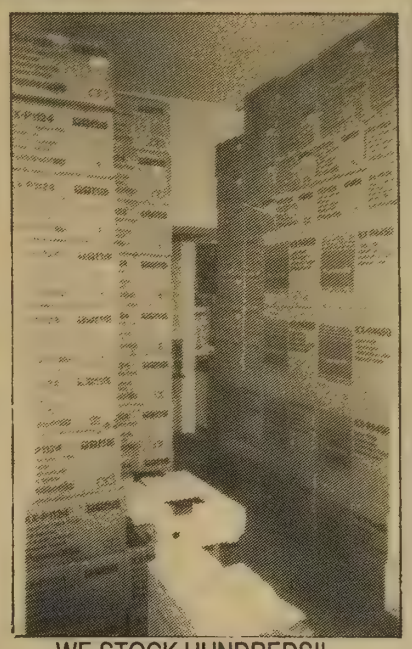
Panasonic computers from $449

"BUSINESS PARTNER"

FX-1950

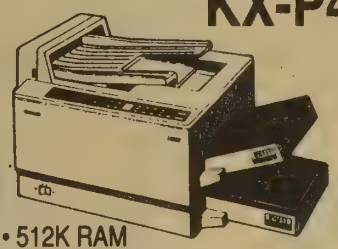
- 80386 CPU, 20MHz
- 2MB RAM
- Expandable to 16MB
- 3.5" 1.44MB FDD
- Six 16 bit expansion slots
- Serial/Parallel
- 101 Keyboard
- Monitor Optional

$1699



WE STOCK HUNDREDS!!

LASER PARTNER™ KX-P4450



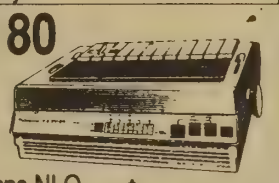
- 512K RAM
- 300 dpi resolution
- 11 Pages per minute
- 500 sheet capacity
- 5 Printer emulations
- Front panel controls

$1399

OPTIONS;
- Extended warranty ..... *
- 1MB Memory $399
- Legal tray $59
- Toner $39
- Envelope tray $85
- T-Font (Tax Font) $129

All Panasonic printers have the following features:
- "EZ-Set" Front Panel controls over 11 Functions!
- Adjustable Push/Pull Tractor
- Paper Park
- 2 year warranty

KX-P1180



- 192 cps; 38 cps NLQ
- 240x216 dpi resolution
- 80 column

$189

KX-P1191

- 240 cps; 48 cps NLQ

$249

PanaSync MONITOR C1381

- 1024x768 resolution
- Multi-Freq, Analog
- Interlaced

$499

KX-P1695

NEW HIGH SPEED PRINTER

- 9-Pin,132 column
- 330cps; 66cpsN LQ
- 6 NLQ Fonts
- 240x216dpi

$499

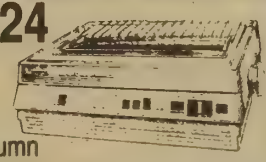
20 % OFF on all accessories in stock

PanaSync MONITOR C1391

- 800 x 600 resolution
- Black Matrix, non-glare screen
- Supports CGA, MDA, EGA, EEGA, VGA, SVGA, PCG, MCGA, 8514/A & HERCULES Video Standards

$499

KX-P1124



- 24-Pin, 80 column
- 192cps; 63cps LQ
- 5 LQ Fonts
- 360x360 dpi

$299

KX-P1624 WIDE CARRIAGE

$449

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VISA

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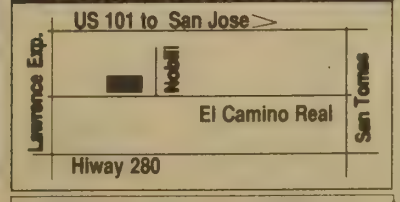

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Sales & Service Open 7 Days

• 0% Interest • No $$$ Down
• No payments'til July ! (on approved credit)

MATH COPROCESSORS

Intel 80387

16Mhz	$349
20MHz	379
25MHz	469
33MHz	589
SX-16	329

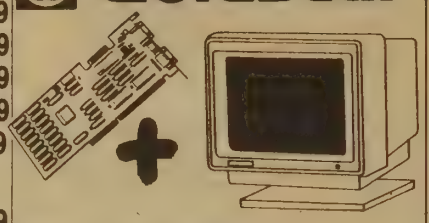
WEITEK

3167-25MHz	$429
3167-33MHz	559

SIMM MODULES

256K x 9 -10	$25
256K x 9 -8	29
1MB x 9 -10	89
1MB x 9 -8	95

GoldStar



VGA PACKAGE $499
- VGA monitor
- PARADISE VGA+ card
- 640x480 rsolution

EGA PACKAGE $399
- EGA monitor
- STE EGA card
- 640x350 rsolution

PACKARD BELL 286,12MHz LAPTOP

- 1MB RAM
- MS-DOS 3.3G/W
- Backlit

$1979

DICONIX 150 PLUS PORTABLE

PC MAGAZINE EDITORS CHOICE

- 120cps; 39cps NLQ
- AC/DC battery operated
- 3.1lbs

$369

TAPE BACKUP From $299

MOUNTAIN 150MB Int.

IT'S LIKE A SPARE TIRE... DON'T GO FAR WITHOUT IT!

- Save Time
- Save Headaches
- Save Diskettes
- More reliable than a hard disk

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WANGTEC	125MB Int/Ext	$899/1099
WANGTEC	60MB Int/Ext	629/799
TEAC	60MB Int/Ext	599/689
COLORADO	60MB Int.	299
EVEREX	40MB Int	299

ACCESS

•72 HOUR Burn-in •1 year Parts & Labor Warranty (Optional 3 Year Warranty)

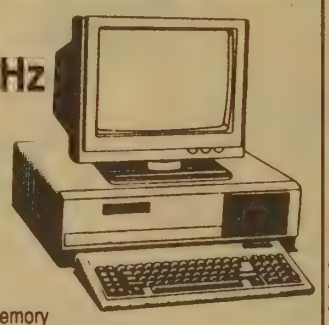
286 12MHz 0 WAIT

- 512K Memory
- FDD/HDD Controller
- Teac 1.2 MB Floppy Drive
- AT-Style Keyboard
- Monitor not included

$499

16MHz version.....$799

386 20MHz



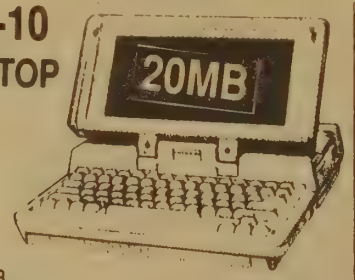
- 1Meg Memory
- 1 to 1 Interleave Controller
- Teac 1.2 MB Floppy Drive
- AT-Style Keyboard
- Monitor not included

$1099

With VGA Monitor & card.....$1599

HYUNDAI Practical Compatibles.

286-10 LAPTOP



- DOS 3.3
- Backlit Screen
- AC battery operated
- Take math coprocessor
- Removable rechargeable battery

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OPTIONAL
Ext 1.2MB Floppy Drive for $199

386SX 40MB

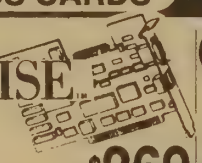
- 1Meg RAM...Expandable to 8MB
- 1.2MB FDD
- Reliable Conner HDD
- 6 expansion slots
- 3 drive bays
- Monitor not included

$1699

With ATI VGA WONDER Card & HYUNDAI MONITOR $2199

GRAPHICS CARDS

PARADISE 1024 VGA



- 132 column text
- support IBM PS/2
- 3 Year warranty

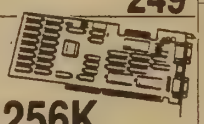
$269

VGA Plus	169
VGA Plus 16	229

VIDEO SEVEN

VRAM 512K	$449
1024i	249

Genoa 6300 VGA 256K



- 1024x768 4 colors
- Upgradable to 512K

$199

Super EGA 800x600	89

ATI VGA WONDER 1024x786 OEM $209

ORCHID

Pro Designer PLUS w/512K 1024x768	$299
Pro Designer	269
Designer 800	169

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"It's a SONY" 1304HG $669

- VGA up to 1024x768
- .25 Superfine dot pitch

PC mag Editor's Choice

1302 AW	$599
1320 VGA w/ Cable & Base	489

Seiko Instruments Inc

VGA PACKAGE $769
- CM-1440 VGA monitor
- GENOA VGA card
- 1024x768 res
- .Trinitron Tube

POWER II VGA PACKAGE $649

- POWER II monitor
- PARADISE VGA card
- 1024x768 res
- .28 dots

NEC 5D	$2299
NEC 3D Multisync	599
NEC 2A	499
NEC Multisync GS 2A	249
NANAO 8060S	569
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MITSUBISHI 16" 1280x1024	1099
MAGNAVOX EGA	299
HYUNDAI EGA	309
HYUNDAI VGA COLOR	369
HYUNDAI Amber Mono	79

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MICROPOLIS ESDI	338MB 1558-15	$1695
	142MB 1355	899
MINISCRIBE	380MB 9380E	1495
	158MB 3180E ESDI	1195
	72MB 6085 28ms	499
	72MB 3085 22ms	589
SEAGATE	120MB 4144R	699
	80MB 4096	549
	40MB 151 24ms	389
	40MB 251-1 28ms	345
	30MB 138 3.5"	289
	30MB 138R	269
	20MB 125 38ms	229
	20MB 225	199
TOSHIBA	42MB 3.5"	439
	65MB RLL 25ms 3.5"	795
	109MB RLL 25ms	895
MSQUARED	30MB slot card	329

FLOPPY DRIVES

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TEAC 3.5"	720K	75
TEAC 5.25"	1.2MB	88
TEAC 5.25"	360K	75

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NORTHGATE	Plus	$109
	OmniKey	79
Maxi/Keytronic	101Key	59
Mitsumi	101Key	49

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WESTERN DIGITAL

AT Floppy/Hard Disk Controllers
1 to 1 Interleave

ESDI	$199
RLL	149
MFM	129

EVEREX MFM	$99
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WordPerfect Version 5.1

- Pull-down menus
- Spreadsheet Import
- Speller/Thesaurus/ Hyphenation
- Integrated text and graphic

$249

CRIMEwave by ACCESS	$49
Norton Advanced Util	79
MicroSoft Window 286	69
LOTUS 1-2-3 Rel 2.2	339

Public Domain Shareware in stock from $3

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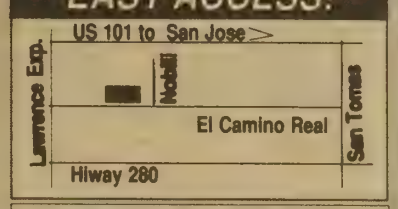

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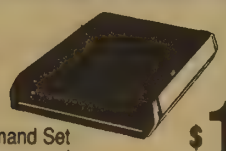
SUN 12-5

MODEMS
GoldStar



- AT Command Set
- Exrt power supply!

$139

1200BD Int.	$49
1200BD Ext	59
2400BD I nt.	129
2400BD I nt. MNP5	149
2400BD Ext.	179
2400BD Ext. MNP5	199
FAX MODEM 2400 Modem;9600FAX	289

EVEREX "EXTRA" Excellence

EVEREX

RAM 2000 XT	$69
RAM 3000 AT	99
RAM 10000 AT	149
RAM 8000 AT	289

EVEREX EV125
16 bit ATI/O
Parallel/Serial/Memory
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GRAVIS Joystick $49
analog game port 29

20% OFF
all educational software

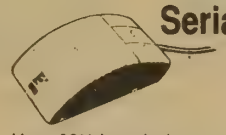
LOGITECH

SCANMAN PLUS
Scanner

- Adjustable 100-400 dpi Resolution
- Extended Editing Utilities
- Improved Photo Scanning
- Includes "PaintShow Plus

$179

Series 9 Mouse
Serial/Bus



- Uses 62% less desk space than standard mice
- Precise pointer control at any resolution.
- Adjustable resolution...50-19,000dpi

$79.95

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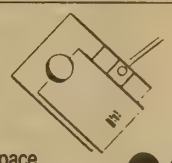

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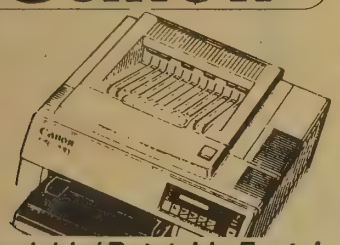

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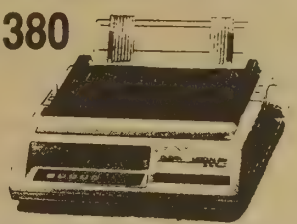

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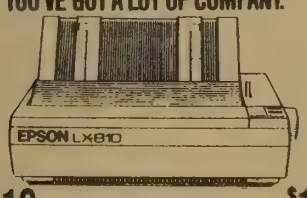

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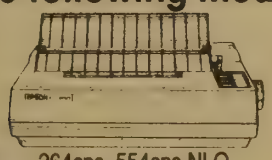

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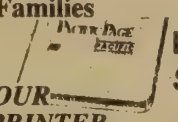

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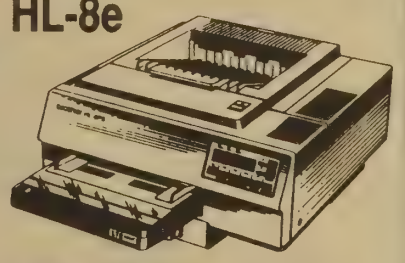

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Mitch Kapor *continued from page 92*

how to make this stuff easy to use; they let the market do it, because the interfaces are all public. You buy the book, you write your product, and you sell it, and a few good ones succeed.

With VCRs, suppose I can figure out how to make it easy to program. It's a closed box. The bus is closed, there's no software— I can't make a product. What they ought to do is what Apple did in '78, which is to open up the interface. It's to say, here's the manual, here's the bus, here are pinouts, here's the API, go for it.

The brilliant social invention of the PC industry is the fact that you get this sort of market-mediated innovation where you let market forces, inefficient though they are, sort of propel the whole mass forward. You rely less on a few firms.

There are two big sources for the PC revolution. One is all the stuff that went on with Xerox and DARPA funding and timesharing and all of that. The other is the hackers, the Homebrew Computer Club—the hippies. It was the hippies that made open architecture. In the old days, somebody went through Steve Wozniak's desk drawers in 1978, Xeroxed all this unreleased documentation, and sent it out to everybody. That was the real beginning of open architecture—this is not something that was thought up at DARPA or Xerox PARC.

So I say, give the hippies credit. Because it's now the accepted way that things are done.

You were basically proposing that success in the computer or software business had to do with being right, and I wonder if luck isn't a bigger factor.

I think it's 10 or 20 percent being right, and 70 to 80 percent Other. The correlation of justice and success is a small positive number.

About like it is in the music business, it looks like.

It seems like it's really difficult for those really creative people to come on and do it again. Gates's success is not based on his creative abilities.

No, being successful has to do with knowing how to build and run a big business, which is an art form of its own, but it's different from making great products. This really bothers me, because what I like is great products that make a difference in people's lives.

But if I force myself to be intellectually honest, I would have to say that if I really wanted to build a big business, I wouldn't pay so much attention to making great products. I'd make okay products, and I would take the additional time and energy that would be freed up—because it's really hard to make great products—into building a big business. But that's not me.

"The brilliant social invention of the PC industry is the fact that you get this market-mediated innovation where you let market forces, inefficient though they are, propel the whole mass forward. You rely less on a few firms."

To build a really big business, you need to make this your first and foremost goal, not making terrific products. It's not that the two are totally incompatible. Obviously, that's not so. What is so is that in a world of limited resources, you're constantly faced with choices about where to put the extra ounce of effort. In Microsoft's case, as I see it, the extra effort goes into extremely aggressive competitive moves that really have everything to do with benefiting Microsoft and very little to do with benefiting the customer.

Right now, I think we're seeing in Microsoft the creation of a great post-industrial empire comparable to the creation of Standard Oil in the nineteenth century, and when people write the books about what was going on in the 1980s and the 1990s in the economy, they're going to wind up writing about Microsoft and how Bill managed the IBM relationship so well that he held a $60 billion company hostage for a decade.

It's all quite brilliant, but it bothers me, because I think that product quality and the net benefit to users could be much, much greater if Microsoft were more sensitive to user needs.

For a while I kept wanting to attribute malicious motives to Microsoft and Gates, and if I were to be intellectually honest, I found that I just couldn't do it. But ultimately I'm not

continued on page 112

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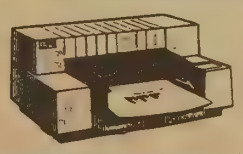

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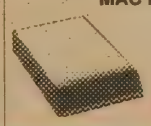

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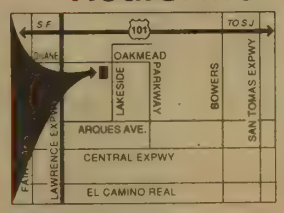

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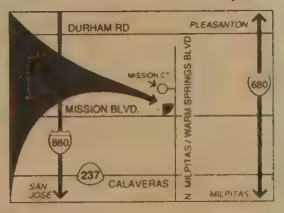

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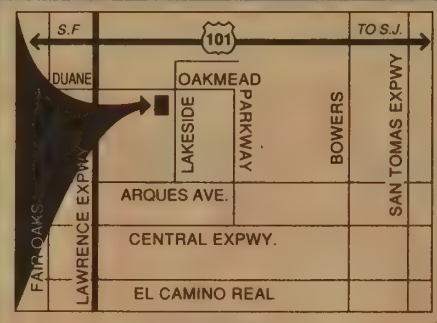

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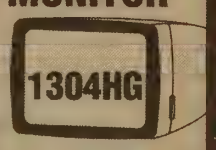

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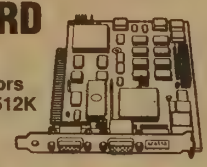

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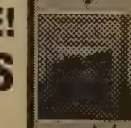

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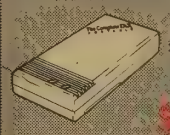

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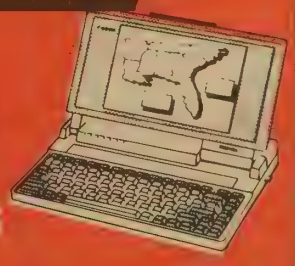

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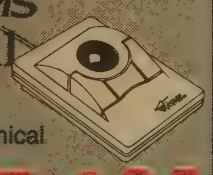

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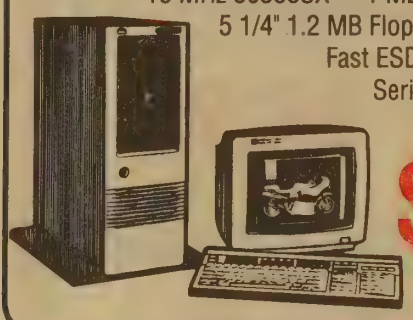

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Vectra QS/16S 386SX

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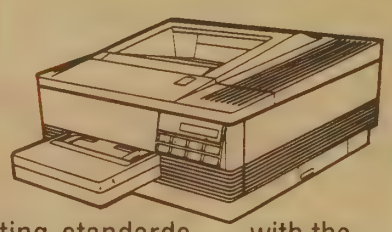

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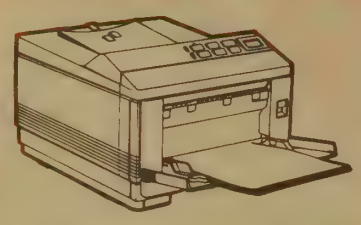

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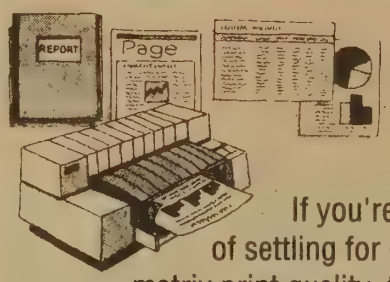

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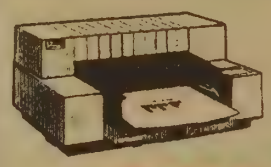

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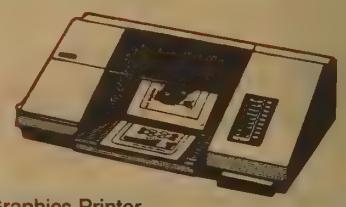

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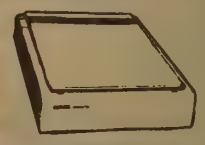

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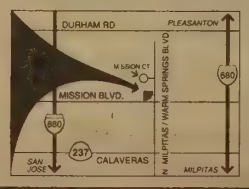

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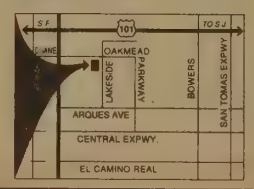

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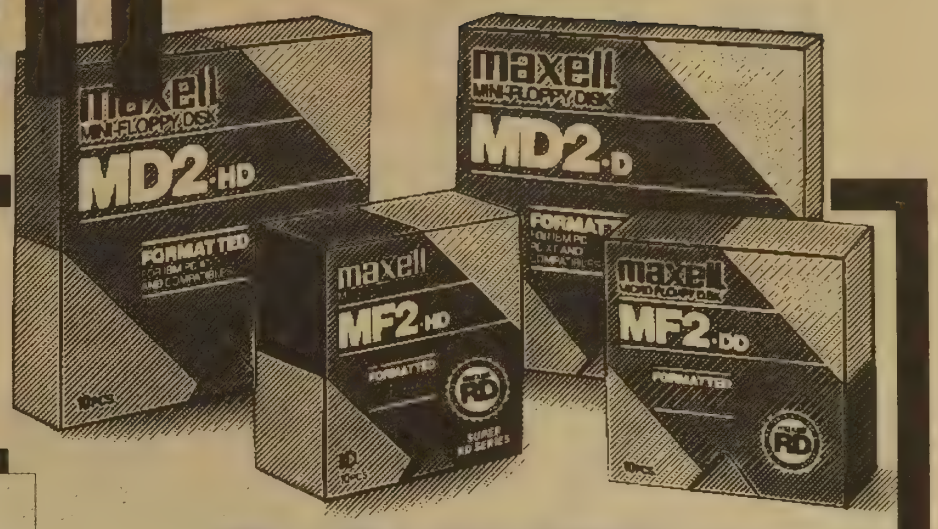

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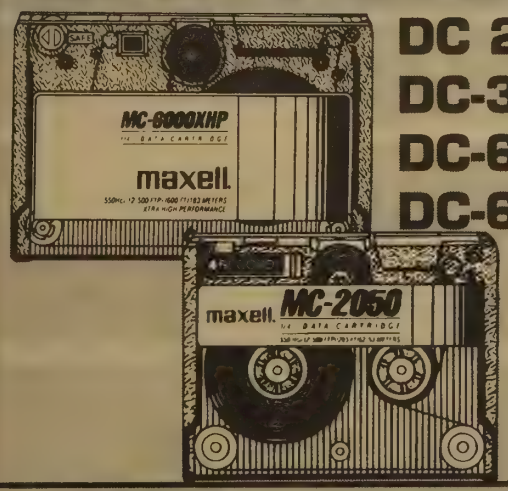

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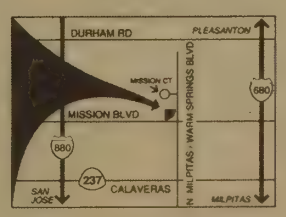

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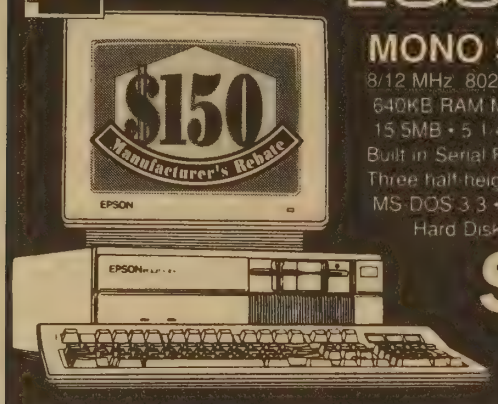

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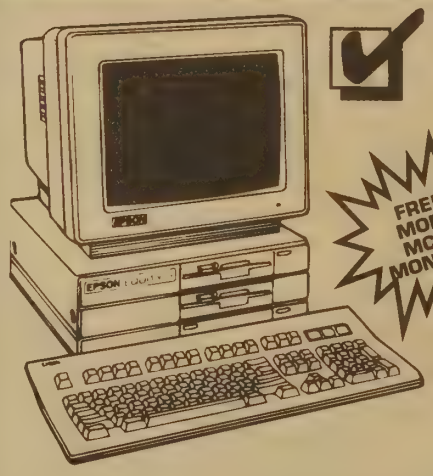

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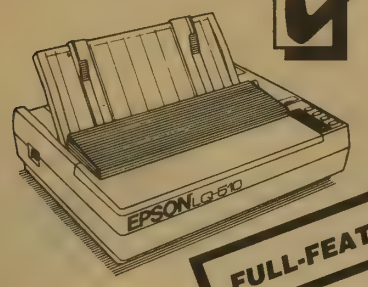

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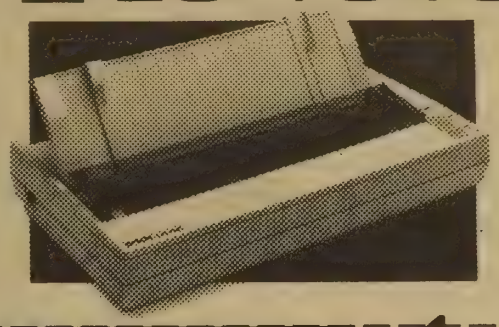

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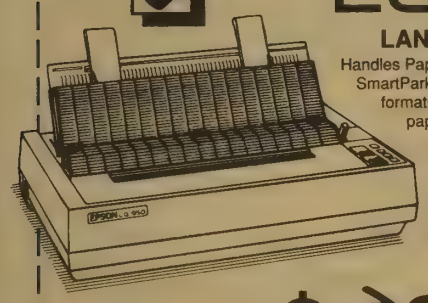

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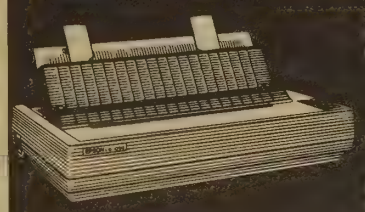

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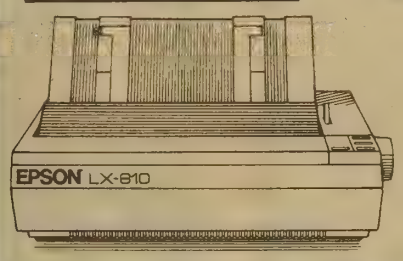

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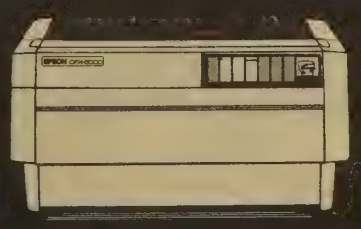

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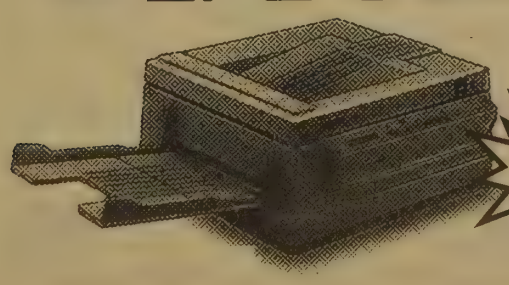

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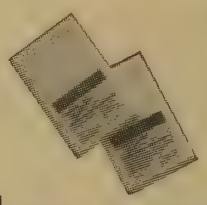

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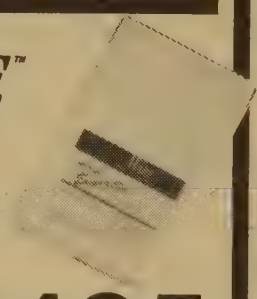

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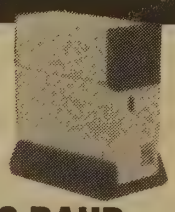

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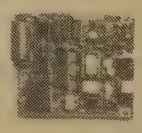

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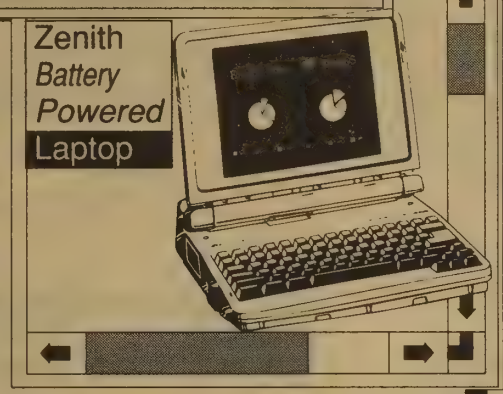

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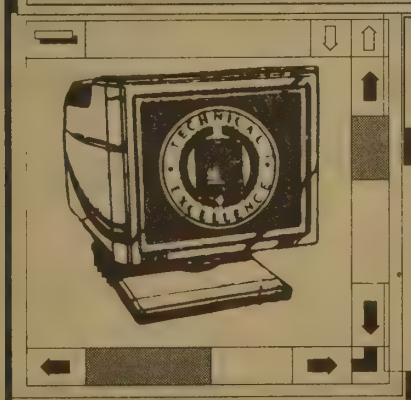

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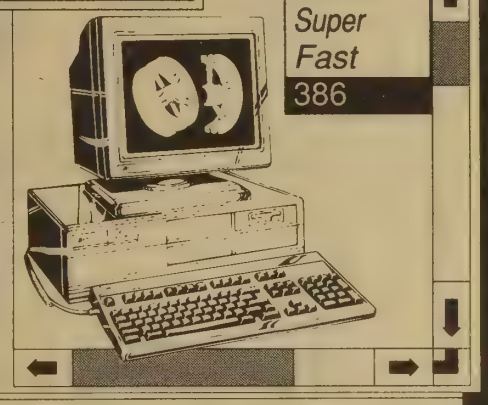

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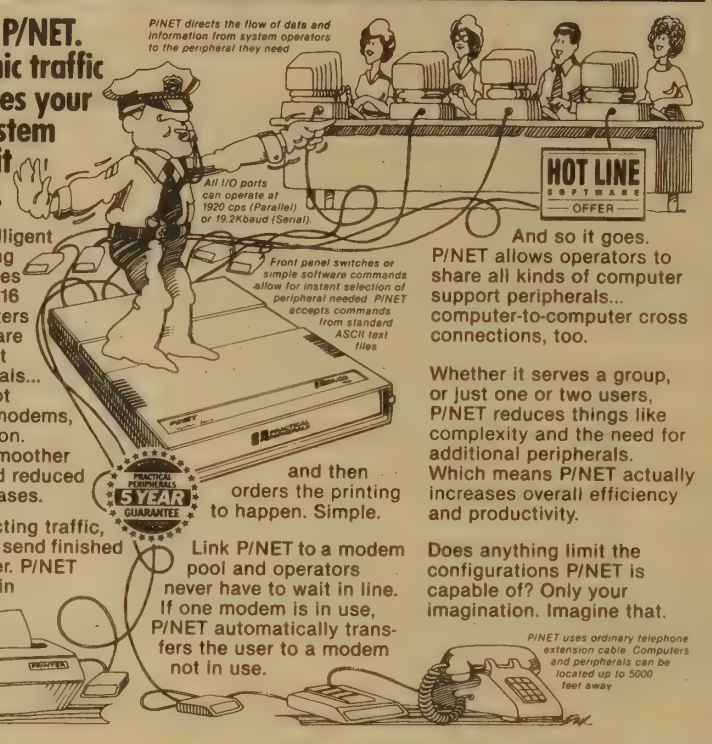
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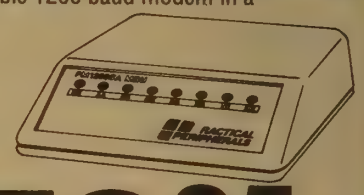

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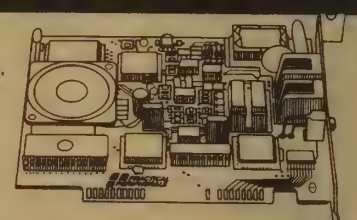

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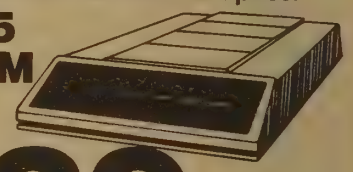

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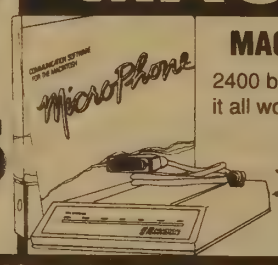

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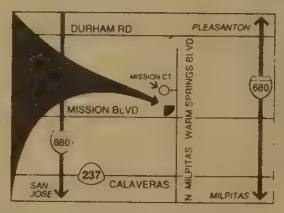

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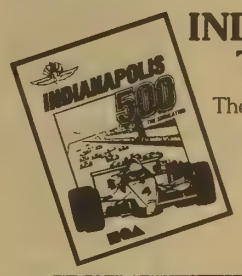

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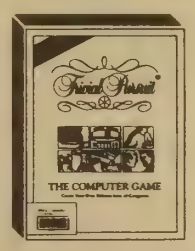

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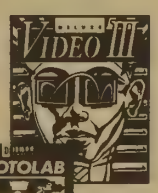

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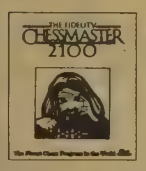

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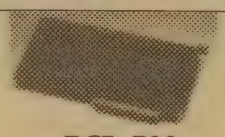

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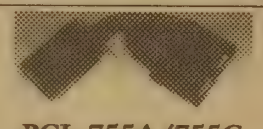

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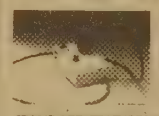

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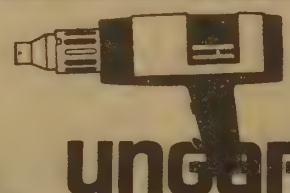

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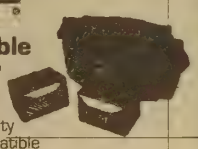

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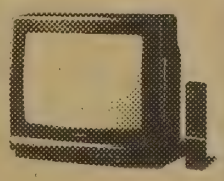

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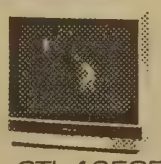

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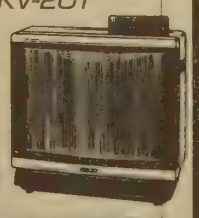

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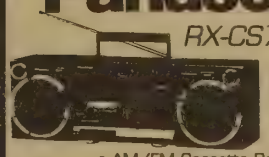

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Mitch Kapor *continued from page 98*

sure that motivation counts for much in and of itself as much as in the results it produces. And if people are intimidated and frustrated by computers, which means in today's world frustrated by Microsoft's pervasive operating systems, then it would be good if Microsoft—and for the sake of completeness AT&T and Sun and the other UNIX providers and so on—expanded their sense of responsibility to take into account more of the well-being of the ultimate end-user population. At least, that's what I would do if I were running the company. It might mean giving up some of the aspiration to dominate every market segment, but I think I could live with it.

I keep wanting to use something besides Microsoft Word. And I can't. When I was on the PC I looked at WordPerfect, which is a truly horrible program—I mean, the only reason it's successful is that they've got 150 good Mormon girls in Orem who'll talk to you all day long. For nothing.

(Laughs) That's not the only reason. They've done a terrific job of understanding that the marketplace really wants service and they want certain kinds of consistency and product quality after a point. Good enough is good enough sometimes.

As much as I resent how Microsoft came to be what it is, which is really a deal with the devil in a way—Gates bought that operating system from his old chum, whose name evades me at the moment...

The guy from Seattle Computer Society, for $40,000.

Gates knew what the deal was. He didn't.

True, but you've got to understand that had he not been able to buy that, he would've done something else. He's very resourceful. A lot of this is just pure will to succeed.

But would you like to be in the kind of position at Lotus that Bill Gates is in at Microsoft?

Well, it was at the point where I realized that that wasn't going to happen that I crossed over the threshold of not wanting to be there.

The difference was that Lotus is grounded by owning the spreadsheet franchise. Which is great if you want to build a billion-dollar business, which they're now in the process of doing. But they cannot affect events in the computer industry, because they don't control a deep platform.

They understand a lot about customers and they control this enormous segment of customers, but if you want to have impact, one way to do that is by controlling system software/hardware. It became apparent to me that that was the right play, and that Microsoft had that, and there was no way Lotus was going to do it. There was just no way it was going to happen.

"If I really wanted to build a big business, I wouldn't pay so much attention to making great products. I'd make okay products, and I would take the additional time and energy that would be freed up—because it's really hard to make great products—into building a big business."

And my goals heavily involve wanting to have impact.

Don't you think it's possible, though, that there's going to be a Balkanization of operating systems?

The problem, though, is that they own most of the Balkans. (laughs)

I think it's important to understand that Microsoft is very powerful, but they're not omniscient. They make large mistakes and some of those mistakes can be exploited. Competing with Microsoft isn't a Sunday picnic though, and you have to expect that if you try to do this, they will come at you hard, fast, and with a street fighter's sense of fair play.

I think an Achilles heel for Microsoft, in the long run, could be being on the wrong side of the engineering/design dichotomy. On the one hand I spend a reasonable amount of time talking to people at Microsoft and to Bill about design and why they should pay more attention to it, and what they ought to do to do even more to fix Windows, and so on, like make autoexec.bat files and config.sys

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Because I'm a realist, and I think the power's going to be in Redmond, and I think they ought to have as good a system as possible.

At the same time I think that ultimately if someone can figure out a way to make products that are better designed for human purposes, that will create some very powerful momentum and be a grounding or an anchor for a company. So the focus on design is actually part of a long-term political agenda.

It does seem that if somebody wanted to set out right now and write an operating system that was both easy to program for and easy to use, for the 486, he would be able to make a great deal of money in a short time.

I think that may be underestimating the inertia factor.

I mean, look at NeXT! They're having a very difficult time. If you can't offer application compatibility, and let's just assume you can't, and your name *isn't* Steve Jobs—I don't know what's going to happen.

The original strategy for ON was essentially this frontal assault on the OS front by doing this object-oriented platform that could sit on top of your basic vanilla operating system that had the multitasking kernel and virtual memory managment and an imaging model. It exists in UNIX, and it exists in OS/2, but we wanted to do something with Apple. But they correctly went with their own strategy of doing something proprietary.

What we were doing was just commercially infeasible. It was the right thing to do, but we just couldn't make the alliances. They weren't going to happen. One could have known that.

What I think *can* happen is that companies can get some stability by doing, let's say, some piece of networking technology like having the standard open relational database server. I don't know if that's going to work for Sybase or not, but plays like that, that sort of don't try to tackle the OS per se but look at some piece of it—or something like Display PostScript, an imaging model... To take components that people are going to want to build on, and sort of drop them into different hardware platforms and establish a constituency that way, strikes me as a reasonably intelligent strategy.

The fact that you've moved to the Macintosh—is that saying anything about your opinion of OS/2-PM?

Yeah. Yeah, it does. (laughter)

So at what point did you become disenchanted with OS/2 and PM?

Well, I was never enchanted with it. Back as long ago as, say, '85, I gave a talk saying that it was going to be probably five years before there were any substantial number of applications that were operating in the paradigm after DOS. This was at a time when Microsoft was saying, like, '87. It was before OS/2 was announced, but they were talking about DOS 5.

I said the 640K barrier was going to hold up innovation in the PC industry. I felt stupid when I was saying that, because it got no reaction. I was a little ahead of my time saying this in '84 and '85, but it's still the case, and now you've got 10, 20, 30 million DOS machines.

I think Microsoft has done the intelligent and adaptive thing of saying "Okay, we will do Windows 3; we will solve the memory problem, after a fashion; we won't have true preemptive multitasking, but at least we'll have memory protection." It's sort of like Apple's System 6/System 7.

Except for the way it feels.

Right. I mean in terms of its plumbing. This is going to delay OS/2 applications by another couple of years, and it'll probably be the mid '90s before that matures.

I went to an OS/2-PS/2 conference in the city here in May, which was one of the most depressing things I think I've ever been to. Gates was there, and a lot of major people from IBM. They were trying so hard to create an atmosphere of victory. It was just not credible.

It's kind of like Romania, you know? (laughs)

It's business, and I think it's important to realize that most of the people who buy and use personal computers don't really care anyway about the kind of design-oriented issues that we're talking about.

You think that's true?

Well, individual users are very sensitive to this, but I'm talking about the people who actually allocate the budgets to spend the money...

Oh, you mean MIS managers.

And management generally. They're either neutral or on the wrong side, because they just have a different agenda.

Do you think that part of their agenda is maintaining a degree of difficulty and austerity in order to maintain their own power?

Again, intellectual honesty compels me not to try to make the case that they're malicious.

I don't think it's malice, I think it's self-protection.

I look at it this way. This is the way computers have always been. In the corporate world there's always been a

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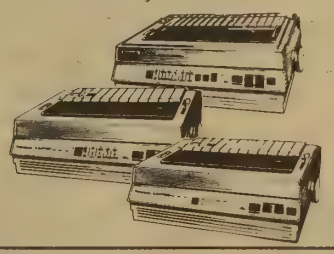

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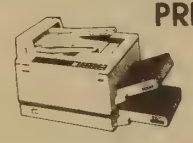

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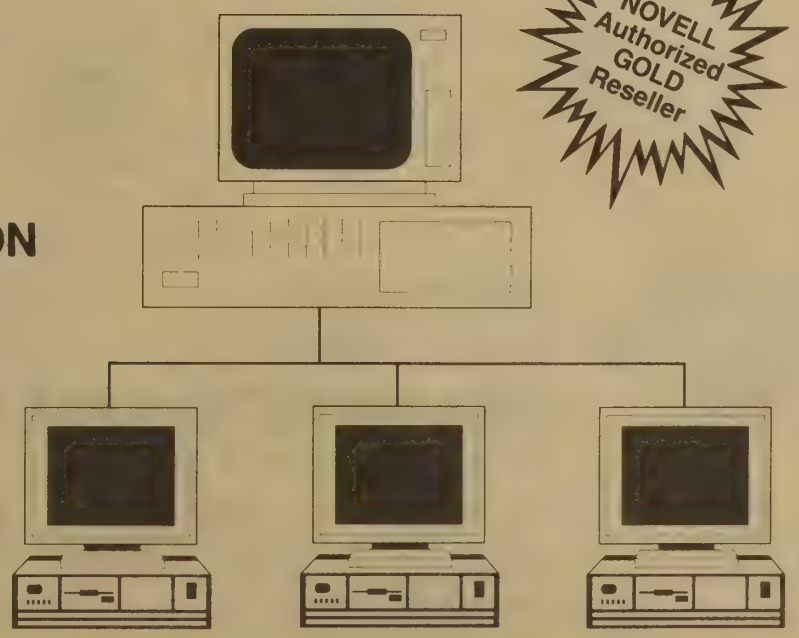

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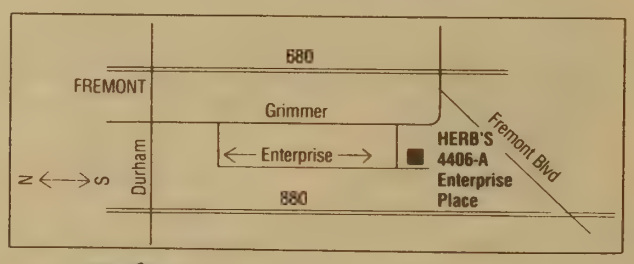

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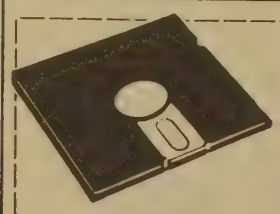

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priesthood of intermediaries, and they have no sense of possibility that it should be otherwise. They missed the PC revolution; by the time it got to them it was very cut and dried, and they're interested in performing their function. They're not thinking about a lot of these other things. It doesn't bother them. They don't see anything particularly wrong about the stuff.

I think there's self-interest. And the other fact of the matter, just from the plumbing point of view on the PC side, is that things are still so ridiculously inept when it comes to networking and everything else that the MIS people are *needed*. If they walked away, everything would stop.

It's going to get worse as every machine in the world has to get hooked to every other machine in the world and you've got 150 different protocols for doing it.

My solution to avoiding revolutionary despair is to cultivate a lot of patience and understand that just because you really think you're right as to how things should be doesn't mean that the world even owes you a cup of coffee. And you have to go out and try to make a difference by whatever means you think is appropriate.

Injecting some new ideas into the discourse can help, because I do believe that the typical user's experience of sitting down at WordPerfect, or 1-2-3 for that matter, is still fraught with difficulty. It's frustrating. They feel intimidated. It's generally known that people use a tiny fraction of the features that are in the product. But even more than that, they feel oppressed by the features that they don't use, because they feel like there's something wrong with them.

So my sense is that you help people by saying, "Look, it's not your fault. This stuff is poorly designed by people that are not sensitive to your experience." It's a consciousness-raising activity. We saw what consciouness-raising did in the women's movement, and I think over the long term people will start being less willing to put up with a lot of the stuff and will start saying "Well, why can't things be different?"

Do you think the Mac upped the ante in that regard?

Sure. A lot. And it's also sort of falling victim to the same problems.

I've basically sold a lot of Macintoshes to people because I love them so much myself, and I'm astonished at how difficult people find even the Macintosh.

By the time you get the Chooser and the Control Panel and the Font/DA mover and a lot of things, it's not simple enough. It's funny, because you look at Windows, and they don't even have a Chooser and a Control Panel, though they're starting to get that kind of stuff. They're about four or five years behind.

System 7, I hope, will be an improvement in some regards. At least you could have a little folder and drop your INITs and fonts into it, and you don't have to install stuff.

I think virtual memory is actually going to help if they can really make it work. Because a lot of times things crash—this is something I think that people don't know unless they actually build Macintosh applications. There are almost no facilities anywhere in the toolbox to help you out in low-memory situations. And unless you go through and completely bulletproof your code, if you get into low memory, sooner or later you're going to crash. And that's why the Mac has its well-deserved reputation for not being robust. Boom! When it goes down, it goes down hard.

A while back you said we're still using the Scholl's keyboard, which made me wonder if you didn't think that user interfaces ought to be getting away from that whole alphanumeric jones into something else altogether.

Well, it's kind of a function of what the hardware permits. I think the thing that's going to make the biggest potential difference is being able to create more realistic images on the screen, both photorealistic and moving images, and also things that respond to multiple modalities. The bandwidth from the user to the machine is real low.

A desktop-metaphor graphic user interface is quite a bit better than an A> prompt, but it still runs out of juice. One of the big wins to all this virtual reality stuff is to build interfaces that feel more natural.

The problem today with virtual reality is that people let their imagination get ahead of them, and the technology is just not up to it. I like what some of the people on the WELL are saying—that it's sort of like living in Nintendo-land, what you can do today.

But it's so philosophically pregnant.

Yeah. I saw some of the ultimate long-term applications of it, like there's some intriguing questions about personal identity and the mind-body problem. A lot of times when people talk about these scenarios, they'll talk about their puppet in cyberspace. But I realized that if you can have one puppet, you can have five or six puppets. And they're all you—you could be seeing what they're seeing, feeling what they're feeling. It's a question of how much bandwidth you could absorb.

They don't have to be human at all.

continued on page 182

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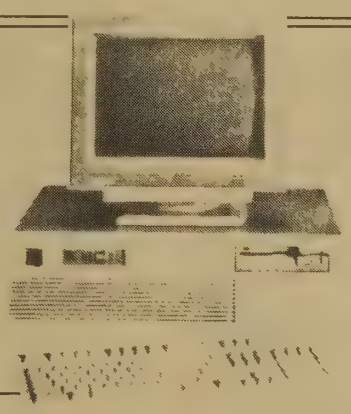

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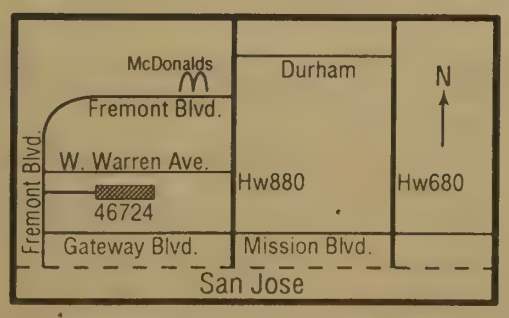

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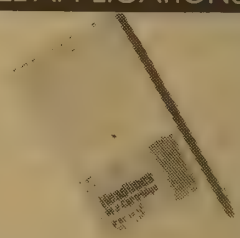

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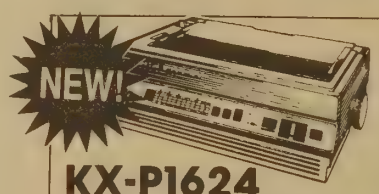

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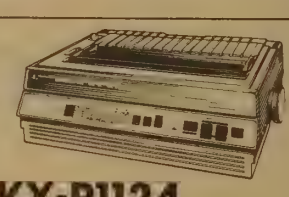

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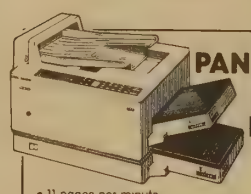

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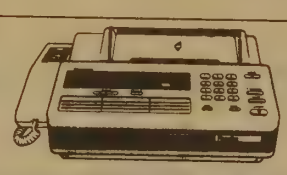

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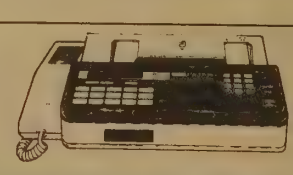

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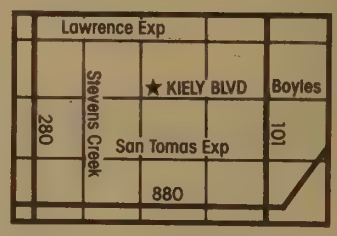

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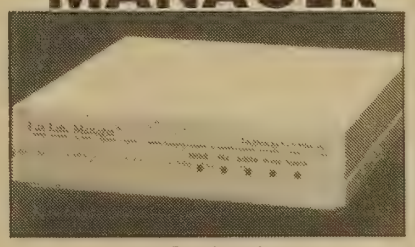

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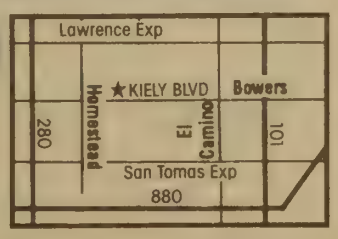
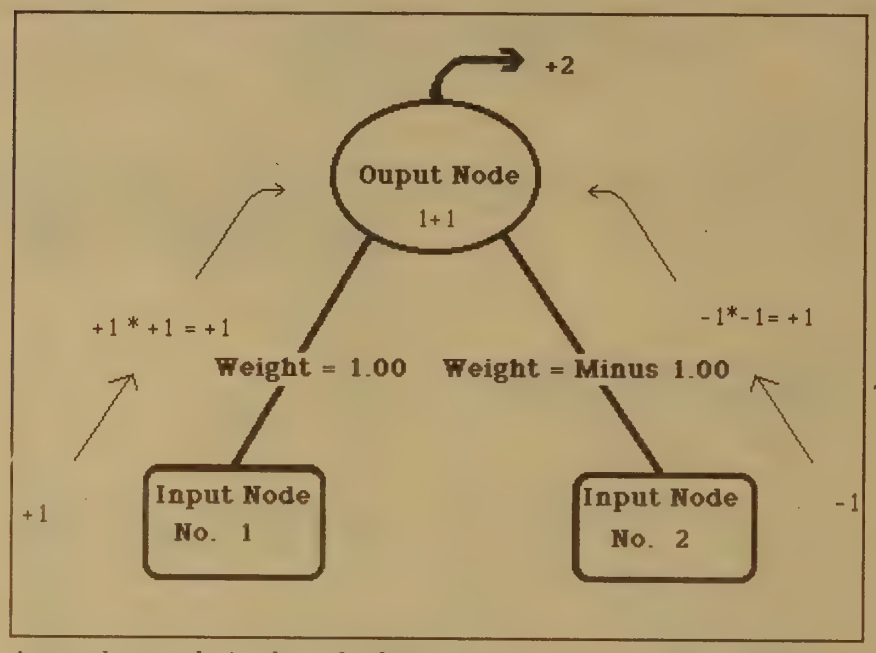


Getting Started With Neural Networks

Long A Subject Of Debate And Speculation, Neural Nets Offer Promise For Artificial Intelligence Applications

By Birrell Walsh



A neural network simulates the decision making with nodes and weights.

As logical processors, computers have long been able to reason. What they have not been able to do is perceive. They cannot easily take an incoming flow of information and find patterns in that flow. They also have not been able to learn anything that they have not been programmed to learn.

Now neural networks let computers simulate perception and learning. The interaction of their many elements at almost the same time is analogous to the parallel operation of perceptual systems. Networks "learn" by giving a trial response to a collection of inputs. If the response is wrong, they adjust their response by modifying their internal way of representing the inputs. Rather than simply changing their behavior, they (forgive the anthropomorphism) change their attitude.

Neural networks are different from most programs in that they work by approximation. They can be mistaken in exactly the same way that a viewer may confuse two people at a distance. But even the errors they make may have applications: researchers in human creativity suggest that a critical part of creative behavior is to act as if two unlike things were the same.

Applications abound. Neural networks have been taught to distinguish beween the sonar reflections of a submarine and those of a rock. They have been used to diagnose heart conditions from EKG traces. They have been used to judge the repayment potential of loan applications, and to predict the weather. They are being used right now at Kennedy airport in New York. SAIC's thermal neuron scanners use neural networks to search for explosives in airline baggage.

I was skeptical of all the claims until I worked with a system called Neuroshell. I built an interface for the program which allowed it to record typing styles of keyboard users. My wife and I each typed a phrase 30 times. With those examples, the Neuroshell network was able to recognize which of us was typing from a small sample. It was spooky. but it made a believer out of me.

How Do They Work?

Neural Networks have many forms (called "paradigms") that do different things, but all of the varieties share a few characteristics. They use "nodes" and "weighted connections." An analogy:

If you watch television commentators, you soon come to know which ones you trust and which ones have it all wrong. After this learning period you can judge issues entirely by what the commentators say. If the commentators with "good opinions" are for something and the commentators with "bad opinions" are against it, then you can safely be for it. If the good commentators are against it and the bad ones are for it, then you can be against it. If they are less definitive, so are you.

In the picture, you have learned to trust the commentator on TV Channel 1, and to distrust the commentator on TV Channel 2. Channel 1 says to re-elect Snodgrass—that's one vote in your mind for Snodgrass. The untrustworthy Channel 2 commentator says *not* to vote for Snodgrass, and that is a second vote *for* Snodgrass. You are now using the "network" of two commentators and the weights you give them as a kind of sensor to evaluate new situations.

All this can be translated into neural network language. Instead of television commentators, we have "input nodes." You become the "output node." The credence you give each commentator becomes the "weight" of the connection between the input node and the output node. The system is the same; it is just abstracted into a network model. Now the the first input node carries plus 1 for "Vote for Snodgrass" and the second input carries minus 1 for "Vote against Snodgrass." The output node takes what comes from each input node, multiplies it by the weight for that input node, and adds the result.

During the learning period, the weights given to each input are adjusted if the output is wrong when compared with a known correct answer. The error is reduced by a kind of "getting colder, getting warmer" learning. When the results are consistently satisfactory—because the outputs are what they should be, given the input—the weights are frozen and the network is ready for use.

Notice that if one commentator is certain and the other has no opinion, the output is less certain (plus or minus one instead of plus or minus two). If they agree, the output is zero—modeling the kind of confusion people of strong political opinion felt in 1989 as the East and West were agreeing. If one of the commentators is less important, the weight might be closer to zero (instead of plus or minus one) on that input. That commentator's (or that node's) influ-

My wife and I each typed a phrase 30 times. With those examples, the Neuroshell network was able to recognize which of us was typing from a small sample. It was spooky, but it made a believer out of me.

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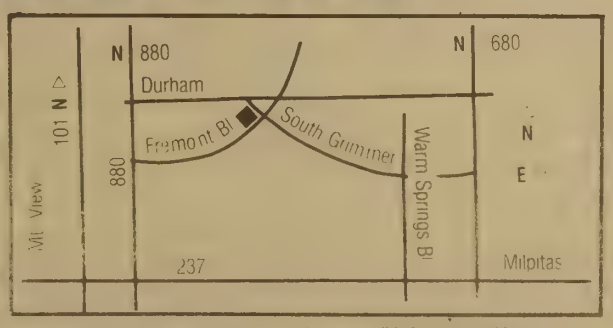

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INPUT VALUE	INPUT WEIGHT	PRODUCT OF THE VALUE AND WEIGHT
+1	+1	+1
-1	-1	+1
SUM OF THE PRODUCTS:		+2

$$\text{sum} = \sum_{i=1}^{2} (V_i)(W_i)$$

Behind the neural network is an even more abstract pattern of tables and formulas.

ence on the output would be proportionately less. Even this simple network has surprising subtleties.

The whole operation can be made into a table, the sort you could use in a spreadsheet. What started out as a viewer with strong opinions sitting in front of a television set being informed by his favorite (and un-favorite) commentators has been progressively abstracted into a three-node network, and then again into a tabular operation. A final step in abstraction is to turn the result into a formula: the output becomes the sum of the products of weight times input. The information that was present in the viewer-television system is preserved at each step of the abstraction.

It is because this kind of abstraction works that neural networks are useful. Neural network theoreticians use the "network" image to model situations like the TV viewer, but they use the formula to do their programming and calculations.

Is this all there is to neural networks? Oh, no. This is how they began more than 20 years ago. Now they may have thousands of nodes, and hidden layers between the input and output nodes. They "learn" by simple or complex formulas. Some can train themselves.

Neural networks are very different from conventional programs. Networks can recognize patterns in the input data, but they store that recognition in the weights they assign to connections. Because they use unfamiliar ways of storing information, and because of the mathematical complexity involved, these programs are difficult to learn about.

So How Do I Learn About Them?

When I began writing this article a long, harrowing year ago, there was not much literature for the beginner about neural networks. The research was being done by technically literate workers at MIT and elsewhere. They did not hesitate to speak in the shorthand of mathematical notation. The air grew full of jargon and impenetrable shoptalk.

Because of the writing of one remarkable woman, the beginner now has a fighting chance. Maureen Caudill is president of Adaptics in San Diego, and she is a master of clarification.

Her non-technical overview of what neural networks are and what they can do is *Naturally Intelligent Systems* (MIT, $19.95). She talks about the history of network simulators and gives a non-mathematical summary of their capabilities. This is the book to get if mathematics are totally distasteful to you. She also wrote an excellent set of articles which have some mathematics for *AI Expert* magazine. Miller Freeman in San Francisco (415/397-1881) has republished the articles as a thick pamphlet called *Neural Network Primer* ($8.95). She continues to write about networks for the magazine, and it has frequent articles and occasional whole issues on the topic. It is well worth a subscription if you are interested in neural networks or any form of artificial intelligence: *AI Expert* (Miller Freeman, $37/year).

MIT Press is preeminent in neural networks publishing. *The* classic in the field is the two-volume set called *Parallel Distributed Processing* (MIT, $35). It is so familiar that it is simply called "PDP" in other authors' literature. It was one of the first publications to bring together the various working networks. Some of the articles are very accessible; some are quite technical. All of them are well-written, and if you want to get a good start in the field you will need both volumes.

MIT has also released a workbook to go with PDP: *Explorations in Parallel Distributed Processing* ($32.50). It has disks (for IBM-compatibles and the Mac) of working neural networks that go with the explanations in the textbook. It also has pseudo-code programs to implement the various network models. If you plan to design your own programs from the ground up, this book will be exceedingly valuable to you.

Neural networks have been used to judge the repayment potential of loan applications, and to predict the weather. They are being used right now at Kennedy airport in New York—thermal neuron scanners use neural networks to search for explosives in airline baggage.

Neurocomputing: Foundations of Research ($30) is a compilation of key historical papers, while *Neural Networks and Natural Intelligence* ($42.50) is a 1988 collection of papers edited by Stephen Grossberg, a wizard among wizards.

Network Software

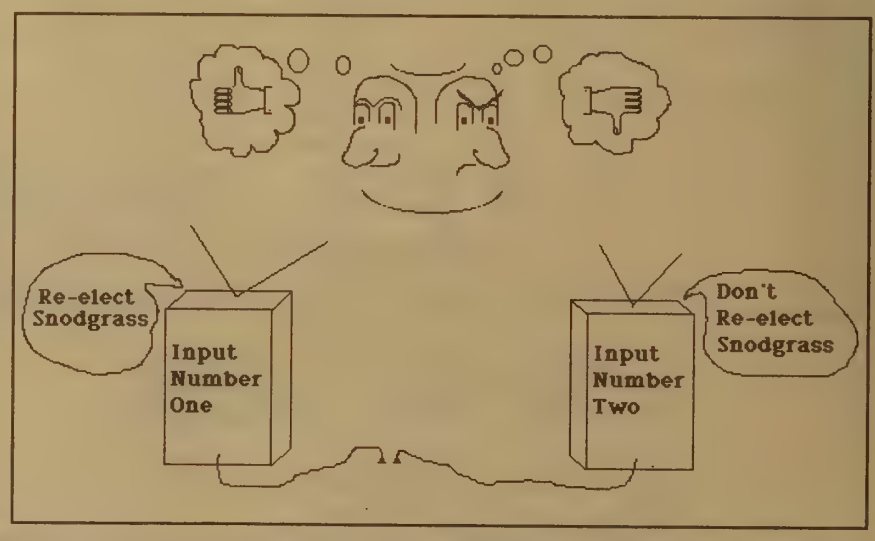
Network software (like the literature) comes in easy and industrial-strength concentrations.

My favorite for a beginner with a DOS computer is NeuroShell ($195 from Ward Systems, 301/662-7950). It hides almost all of the details of the network, and gives you a chance to try out the whole idea without returning to school. Do not think for that reason that this software is a toy. It is a serious product that is working today in businesses and scientific applications.

What the author has done is to choose the most common paradigm ("Back Propagation") and preset the various parameters to the most common values. He has an easy-to-use interface for both interactive and batch work. He wrote a good, clear manual. I had a network working(!) within an hour. You can buy extensions that will access dBASE files and will convert your trained network into a C, Pascal or Fortran program.

We move quickly to the high reaches of industrial strength. NeuralWare (412/787-4222) offers NeuralWorks Explorer ($299) and NeuralWorks Professional for DOS, PS2, the Mac ($1495) and Sun ($2995). It has a graphic interface designed by the company, with pull-down menus and full representation of what the network is doing. You can place "probes" on any node in the network and keep a running graphic trace of its behavior. It is for professional use. As a beginner, I found it quite difficult. This is not to fault it; it's like learning to drive in a race car.

NeuralWorks supports all of the popular neural networks paradigms, and it will work with the N-Cube and rival SAIC's Delta board. When you buy NeuralWorks, you put yourself in touch with a training system and a



A viewer watches television and makes up his mind about an issue based on the weight he gives two different commentators.

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ECI 386-25MHz 64K Cache VGA System

$2755

- Landmark=38, SI=30
- Full Size Case w/230W Power Supply
- Full size 4 layer mainboard running at 8/25MHz 0/1 wait state
- Double Sigma Intel 80386 25MHz CPU & PHOENIX BIOS
- 80ns 1MB RAM standard expandable to 16MB
- 1:1 interleave HD/FD controller card
- Full High 80MB 28ms hard disk
- 1.2MB and 1.44MB Floppy Disk Drives
- 2 serial (one optional), 1 parallel, and 1 game port
- 16-bit VGA card w/256K RAM
- 14" Hi-Res color VGA Monitor
- 101 Keytronic Enhanced Keyboard
- 1x32 bit, 5x16 bit, and 1x8 bit slots
- Sockets for 80387 Math Co-processor
- Real Time Clock/CMOS memory w/Battery Backup
- Ideal for Desktop Publishing, CAD and Network Service
- OS/2, Xenix and UNIX compatible

Other Options Available

Made in USA

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ECI 386-25 VGA SYSTEM

$2355

- Full size 6 layers main board running at 20/25 MHz w/ 0/1 wait state
- Double Sigma Intel 80386 CPU and latest AMI BIOS
- Landmark=34.5, SI=28 w/memory interleave
- 1 32-bit, 5 16-bit, and 2 8-bit slots
- 80ns 1MB RAM standard expandable to 8MB on board or up to 16MB total using dedicated 32-bit memory board
- Sockets for 80287 and 80387 Math co-processors
- CHIP-TECHNOLOGY chip set eliminates overheating and consumes less energy
- Supports Shadow video/ROM and memory interleave
- OS/2 and Unix compatible
- 1:1 interleave HD/FD controller
- 80MB 28ms hard drive
- 2 serial (one optional), 1 parallel, and 1 game ports
- 16-bit VGA card w/256K RAM
- 14" Hi-Res VGA monitor
- Full size case w/230W power supply
- 101 enhanced keyboard
- Ideal for Desktop Publishing, CAD and Network server
- 1.2 Floppy Drive

Other options available

ONE YEAR WARRANTY ON LABOR & PARTS

ECI 386SX SYSTEM

$1195

- 16 MHz Intel 80386SX CPU running at 0/1 wait state
- Landmark=21.6, SI=20. Latest AMI BIOS
- 1MB RAM stsndard expandable to 4MB on board
- 6 16-bit and 2 8-bit slots
- 80387SX Math co-processor socket
- 1:1 interleave HD/FD controller
- 40MB; 28ms hard drive
- 1.2MB floppy drive • 1 Serial, 1 parallel, 1 game port
- Total software compatible w/80386
- Monochrome monitor and card w/parallel port
- Standard AT case w/220 power supply
- 101 enhanced keyboard
- An affordable system w/386 power

Other options available

Free MS-DOS 4.01

UPGRADE	
EGA	1499
VGA	1595
SUPER	1795

ONE YEAR WARRANTY ON LABOR & PARTS

ECI 286-12 SYSTEM

$695

- Baby size main board running at 6/12 or 8/12 0/1 wait state
- 12 MHz Intel 80286 CPU, Award BIOS
- 5 16-bit and 3 8-bit slots
- 1 MB RAM expandable to 4MB on board
- Accepts DIP or sip RAM chip • Socket for 80287
- Very Large Scale Intergration chip set, eliminating over heating problems, and energy saving
- 2:1HD/2FD 16-bit controller
- 1.2MB floppy drive • 1 serial, 1 parallel, 1 game port
- Monochrome monitor and card w/parallel port
- 101 enhanced keyboard
- Standard AT case w/silent 220 watts power supply
- A great general purpose system

Other options available

Free MS-DOS 4.01

UPGRADE	EGA	VGA	SUPER
20MB	1150	1294	1460
40MB	1354	1444	1610
80MB	1569	1659	1825

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B300-AT LAPTOP COMPUTER

The B-300 is a 286-based laptop computer which lets you carry all the processing power of a full-blown desktop AT with you—wherever you go! The package is so complete that it exceeds your expectations in every way. It's main features include:

- 10 MHz 286 CPU
- 80287 Co-Processor Socket
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- 20 MB Hard Disk
- 1.44 MB 3.5" Floppy Disk Drive
- 10.5" Backlit Supertwist LCD
- 1200 BPS Hayes Compatible Modem
- Built-in Color Graphics Adapter
- RS-232 Communications Port
- Centronics Printer Port
- RGB Color Port
- External Disk Drive Port
- Built-in Battery & Recharger
- AC Power Adapter
- MS DOS 3.3 GW BASIC 3.22
- INCLUDES CARRYING CASE
- FCC CLASS B APPROVED

$1995

ECI GAS PLASMA PORTABLE

386-25MHz 66MB HARD DISK & F/DD

640x400 Pixel graphics display
80x25 Character Display
Contrast Ratio: 12
4 Grey Scales

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VGA **2995**

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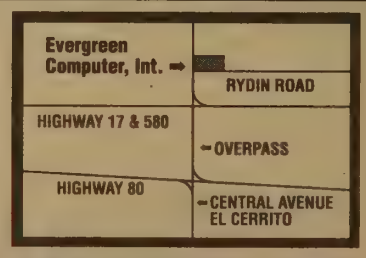

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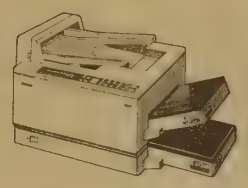
Panasonic Office Automation



Laser Partner KXP-4450

- 11 Pages Per Minute!!
- 300 Dot-per-inch Resolution
- Five Popular printer emulations
- 512K RAM Upgradeable to 1.5MB
- One Year Limited Warranty

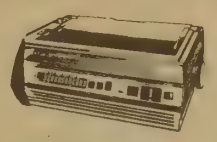
$1325

KXP-4420

- Compatibility HP LaserJet Series II
- 512K Standard, 4.5MB Maximum

$1149

Panasonic Office Automation



KXP-1624

Wide Carriage, 24-Pin Dot Matrix Printer with many high end printer features

- EZ set operator panel controls more than 20 functions
- 360 x 360 dpi resolution
- Multiple font capabilities—2 draft and 5 letter quality

$449

KXP-1524

- Font Selector Draft, Text, LQ, LQ Down Line Load, Font Card
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- Interfaces (Standard) 8 Bit Parallel and RS-232-C (DTR, X-ON/X-OFF)

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Panasonic Office Automation

KXP-1124

- "EZ-Set" Front Panel Controls over 20 Functions!
- 24 PIN For letter Quality
- 192 CPS; 63 CPS LQ
- 360 x 360 dpi

$279

KXP-1180
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38CPS NLQ $175

KXP-1191
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48CPS NLQ $229

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GSX-140

- 24 pin for True Letter Quality
- 192 cps; 64 cps LQ
- LCD Front Panel Displays
- 2 Year Warranty

$295

PC MAGAZINE EDITORS' CHOICE
OCT. 1988
HL-8

M1809 360cps; 75cps NLQ
M1909 Wide Carriage
M1824 270cps; 90cps NLQ
M1924 Wide Carriage

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SEPT. 1989
HL-8e

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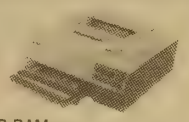

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- 1 MB RAM
- Full Page Graphics
- 44 Internal Fonts
- HP II Compatible
- Postscript upgradeable

PC WORLD BEST BUY
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HL-8

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LOGITECH

- 300 dpi resolution
- Requires little desk space
- Thumb-ball for extra comfort
- Small ball for extra precision

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Bus Mouse C9 320dpi	75.95
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- Heavy Duty model
- Can 360 Saving much time and comfortable for your optical view
- Able to hold monitor up to 50lbs.
- Platform Tray: 12"x 12"

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XT-4380E 338MB 16MS ESDI	1665
XT-4380S 339MB 16MS SCSI	1665
XT-8760E 768MB 16MS ESDI	2895
XT-8760S 768MB 16MS SCSI	2995
LXT-200 202MB 15MS SCSI	1250
LXT-100S 100MB 27MS 3 1/2" SCSI	780

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12" Hi-Res Amber monitor	$79
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NEC Multisync 3D 1024 x 768	595
Sony 1302A 900 x 560	579
Sony 1304 1024 x 768	675
Goldstar EGA Monitor 640 x 350	315
Goldstar VGA Monitor 720 x 480	335
Goldstar Monitor 800 x 600	445
Panasonic C1391 800 x 600	459

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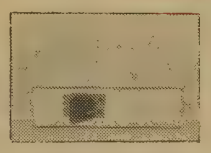

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6'/12'/25' RS232 Cable	$7.95/12.95/19.95
6' Centronics cable	9.95
6' Monitor extend cable	7.95
6' VGA Cable	9.95
AT/XT HDD	7.95/4.95
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ST-225 20MB	$195
ST-251-1 40MB 28ms	299
ST-125 20MB 3 1/2" 38ms	229
ST-4096 80MB 28ms	539

FLOPPY DRIVES

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Fax Card 9600 BPS	189

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NORTHGATE OmniKey/102 and C/T101	85
NORHTGATE OmniKey/PLUS	105
Keytronic 101	55
XT/AT Enhanced 101 Key	39

AUTO SCAN SWITCH, BUFFER CONVERTER

This auto scan switch allows multiple computers to share one printer without the need for manual switching.

MP401 4 computers share one printer (DB25 parallel)	$108
MP801 Same as MP401, except using 8 ports	135
MS401 4 computers share one serial peripheral	114
MS801 Same as MS401, except using 8 ports	139

MOTHERBOARD

386-33MHz w/64K Cache w/CPU (No Memory)	$1400
386-25MHz w/64K Cache w/CPU (No Memory)	940
386-25MHz (No CPU) (No D RAM)	360
386-25MHz w/CPU & IMB Mem Tested	850
386SX-16MHz w/CPU (No D RAM)	330
286-12MHz w/CPU (No D RAM)	145
8088-10MHz (No D RAM)	65

CASE & POWER SUPPLY

XT/AT/Baby AT Case	$35/51/49
Mini AT Case w/200W Power supply	120
AT Case w/230W Power supply	169
150W XT Power Supply	37
200W/220W AT Power Supply	49/49
230W AT Power Supply	50

AUTO DATA SWITCH WITH BUFFER

ASB422-256 ..... $249

• 4 computers share 2 printers • Auto scan or key switch with 256K buffer • Transfer rates 1K abyte/sec/port • LED display, which shows quantity of copies, can be easily set by + or - button

ASB624-256 369

• 6 computers share 4 printers • Port selection through soft code or at the press of a key switch • 256K memory

ASB24-512 419

• Same as ASB624-256 except with 512K memory installed

ADD ON BOARD

Multi I/O (AT/XT)	$30/40
Mono Graphic/ Printer	29
Color Graphic	35
EGA 600x800 card	89
ATI 16 Bit VGA 640x480 (small wonder)	155
ATI 16 Bit VGA 1024 x 768 256K (wonder) oemi	185
ATI 16 Bit VGA 1024 x 768 256K (wonder) w/mouse	215
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AT HCC/FDD Cont 2:1.	79
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AT HD/FD CONT 1:1	89
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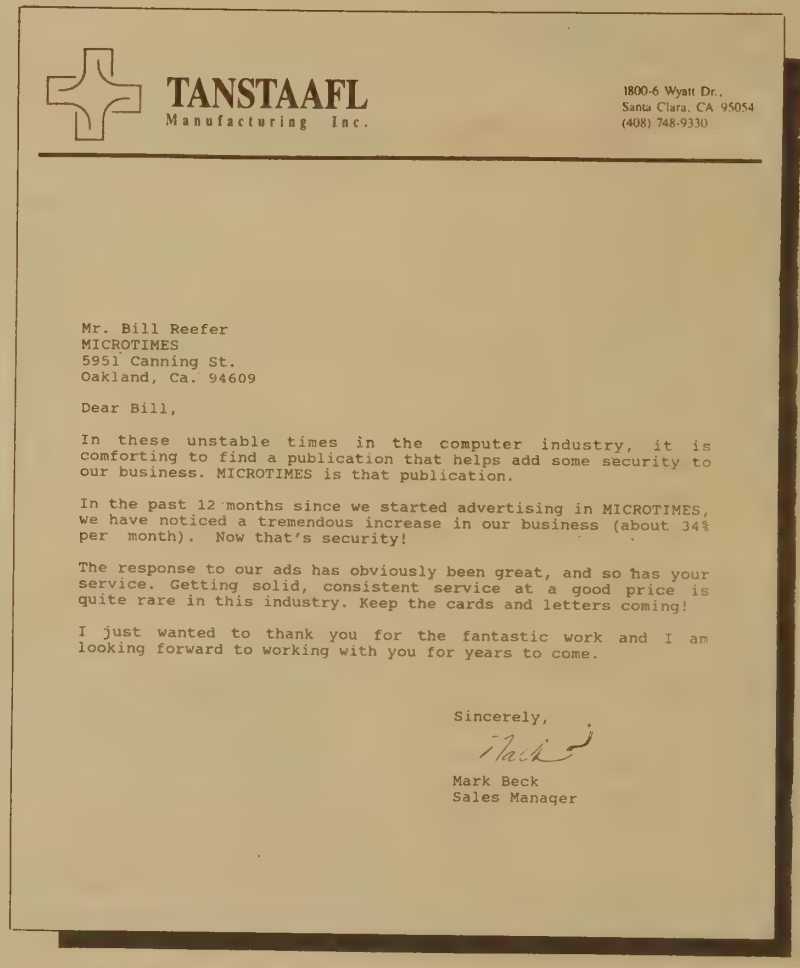

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Santa Clara, CA 95054
(408) 748-9330

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I just wanted to thank you for the fantastic work and I am looking forward to working with you for years to come.

Sincerely,

Mark Beck
Sales Manager

Mark Beck is Sales Manager for Tanstaafl Manufacturing, Inc., one of the leading manufacturers of printer sharing units, located in Santa Clara, CA.

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MICROTIMES™

set of people in the company who want your application to work. They offer seminars at their place or yours. Their people know what they're doing.

SAIC means Scientific Applications International Corporation (619/546-6000). They have landed a juicy contract with the Federal government for luggage-scanners for use in US and European airports. They built the scanner, and into it they put a neural network developed and trained with their own network ANSim ($450). The enhanced ANSkit contains a copy of ANSim, an optical mouse, both volumes of PDP, and a copy of Microsoft Windows so that you can run ANSim on your DOS machine ($995). It is surprising that, despite the Windows, ANSim is slightly less graphic than its rival NeuralWorks. But it uses the interface well, and you can use it to develop a working product for industrial use.

SAIC is a hardware as well as a software company, and their Delta Floating Point board will allow the software to run at many times the speed of an unenhanced machine. The board has been so successful that other software companies have reluctantly written for it. SAIC will sell you a full set of software tools to write for the board if you choose to do so.

For the Macintosh, the choice is MacBrain ($995 from Neuronics, 617/577-1202). It uses the graphic interface of the Macintosh to full advantage. You can learn with this product, and you are not limited to just one paradigm. A menu-driven construction kit allows you to build a complex system that includes a number of different, but interconnected, networks.

You can take much of the product and attach it to a HyperCard interface with the XCMDS provided. MacBrain also has its hardware extensions: It will run on the Chorus Multiprocessor system (212/831-6645).

There is another way to go if you are comfortable with mathematics. Neural networks are usually coded as matrices. The APL language specializes in matrix operations, and STSC (301/984-5000) specializes in APL. STSC's APL*PLUS ($695) allows you to work directly in matrix language and to write extremely compact and efficient programs to handle the calculations.

STSC has a beginner's version, Pocket APL ($95), which lets you try out the language without the major investment; and they have a catalogue of books to introduce you to this most elegant of languages. If you are mathematically inclined, you owe it to yourself to try APL.

Where Do I Start, And Do I Need To?

Start with one of Maureen Caudill's books, and then get some software.

For the Mac, MacBrain.

For a DOS machine, it depends on your temperament. If you want to see something working right now, try Neuroshell. If you like to tinker and are on a budget, try the Explorations book-and-disks combination from MIT. Both NeuralWorks and SAIC's ANSim are for those who are committed to development in the field.

Because the field is new, promising and obscure, the waters are full of sharks who prey on the bewildered. If your boss has told you to get up-to-speed on Neural Networks by next week or else, consider a seminar with a *recognized* company. Consider, for instance, NeuralWare (412/787-8222).

If you plan to be in the computing business five years from now, then yes, you do need to know about neural networks. They are a completely different way of dealing with data than we are now using on computers. They complement the rule-based knowledge that must be programmed with an approximative, self-taught perception which can maintain itself. Fujitsu has just announced a new neural network computer which is two thousand times faster than neural networks we have now. Neural networks will not be the only game in town, but they will be part of every game. ■

Neural networks are different from most programs in that they work by approximation. They can be mistaken in exactly the same way that a viewer may confuse two people at a distance.

Turnkey

NOVELL

NetWorks

4 USER SYSTEM $5674
ELS Level I, 386SX Fileserver
3 ARCnet workstations & 20' cables

8 USER SYSTEM $9729
ELS Level II, 386SX Fileserver
7 ARCnet workstations & 20' cables

Both systems include netware installation on the fileserver, workstation shell generation, 72 hour burn-in testing, and one year phone support. (Ethernet version add $50 per user.)

OPTIONS AND UPGRADES

Fileservers (w/ 4 MB, 110MB HD mono mtr/card, 1ser, 1 par ports)	
386SX	2349
386-20	2799
386-25	2999
Workstations (w/ 640K, 1.2 MB FD, mono mtr/card, 1ser, 1par ports)	
286-12 w/ Arcnet card	820
286-12 w/ Ethernet card	870
Arcnet card	120
Ethernet card	170
Netware ELS Level I	490
Netware ELS Level II	1190
Advanced Netware	1990
SFT Netware	2990
Cable (1st 20 feet)	20
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80386 33 MHz
64K cache
1MB RAM

Full vertical case

$1999

OPTIMA CX25386

80386 25 MHz
32K cache
1MB RAM

Medium size vertical case

$1499

OPTIMA AX20386

80386 20 MHz
w/ Shadow RAM
1 MB RAM

Small Footprint case

$999

386-25 in Mini Vertical - $1199

OPTIMA SX16386

80386SX 16 MHz
w/ Shadow RAM
1 MB RAM

Small Footprint case

$799

Standard Features

include 1.2 MB drive, serial and parallel ports, enh. 101 keyboard, FD/HD controller, one year parts & labor warranty.

OPTIMA AX12286

80286 12 MHz
512 K RAM

Small Footprint case

$499

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(video card included)

Mono	$90
EGA	$350
VGA (16 bit)	$390

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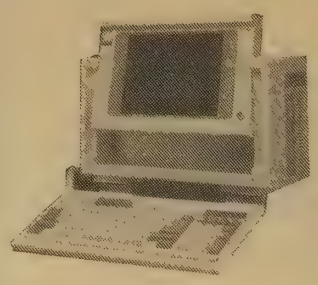

COMPUTER KITS

Desk-Top 80386 AT System	$1400
Desk-Top 80286 AT System	750
Desk-Top 8088 XT System	495

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150W PS	$39
200W PS (UL)	65
230W PS	75
Vertical Case w/230W PS	215
AT-Style Case	38
AT Case	60
XT/AT Keyboard (Click 84 Keys)	38
XT/AT Keyboard (Click 101 Keys)	48
Mini Vertical Case w/200W PS	115
Maxi Switch Keyboard	55

MICE, SCANNERS

Logitech Hi-Res C9	$79
Logitech Hi-Res Mouse C9 Serial	75
Logitech Publishers Mouse	95
Logitech Paint Show	10
LogiCADD	29
PC Optical Mouse (with Dr. Halo)	85
DFI HS-3000 Scanner	175
Scanman Plus	189

PORTABLE COMPUTER KITS

LCD 640x400 11" EGA	$850
LCD—Portable Kit (640x200) 9" Kingtech	480
LCD—Portable Kit (640x400) 11" Kingtech	680
LCD—Portable Kit (640x400) 11" Midem	720
Gas Plasma Portable CGA (640x400) Kingtech	850
Gas Plasma Portable (640x400) PC-III	950
CRT-Portable Kit 9 TTL AT/XT	380
Gas Plasma EGA (640x400)	975
Gas Plasma VGA (640x400)	1500

MONITORS

BTC-1418 14" Flat Screen	$95
Voltron 14" Flat Screen	95
Quimax TTL 14" Monitor	125
Nanao VGA Multisync 8060S	545
Nanao VGA 9070S	950
Relisys EGA 14" Monitor	345
Relisys 14" VGA	345
Relisys 14" Multisync	445
Sony Multisync 1304	650
Quimax VGA 14"	345
Quimax VGA 14" Paper White	135
NEC Multisync 3D	615

MODEMS

Everex 2400 (Ext.)	$185
Everex 2400 (Int.)	145
Everex 1200	69
Telemidas 2400	95
Telemidas 1200	55

MOTHERBOARDS

80386 Motherboard 25 MHz (0K)	$695
80386 Motherboard 20 MHz (0K)	625
80286 Motherboard 16 MHz (0K)	285
80286 Motherboard 12 MHz (0K)	185
80386SX-16 MHz	345
80386SX-20 MHz	385
8088 Motherboard 4.77/10 MHz (0K)	75
Songtech 386-33/25 MHz w/64 cache memory	1250/875

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Fujitsu Floppy Disk Drive (360 KB)	$59
Fujitsu Floppy Disk Drive (1.2 MB)	75
TEAC Floppy Disk Drive (360 KB)	65
TEAC Floppy Disk Drive (1.2 MB)	80
TEAC 3½" Floppy Drive (1.44 MB)	80
Toshiba 3½" Floppy Disk Drive (720 KB)	70
Toshiba 3½" Floppy Disk Drive (1.44 MB)	80
Microscience HH-825 Hard Disk (20 MB)	215
Microscience HH-1090 80 MB 28ms	550
Microscience HH-1120 120 MB 28ms RLL	650
Microscience HH-1050 HD (44 MB, 28ms)	365
Seagate ST-125 Hard Disk (20 MB, 28ms)	245
Seagate ST-138 Hard Disk (30 MB, 28ms)	285
Seagate ST-225 Hard Disk (20 MB, 65ms)	205
Seagate ST-238 Hard Disk (30 MB, 65ms)	215
Seagate ST-251-1 Hard Disk (40 MB, 28ms)	345
Seagate ST-4096 Hard Disk (80 MB, 28ms)	550
AMS 1100M 4/SR4 HD/4 FD Controller	115/135
EFC (XT/AT, 360/720K/1.2/1.44MB, 2P)	40
EFC PLUS (360/720K/1.2/1.44MB, 4Ports)	65
DTC-5150 Hard Disk Controller for XT	60
DTC-5160 Hard Disk Controller/XT (RLL)	70
DTC-5280 HD/FDC Controller AT	105
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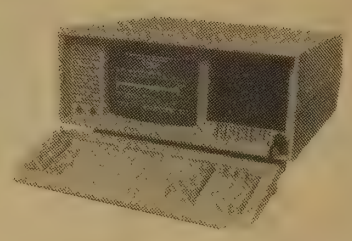

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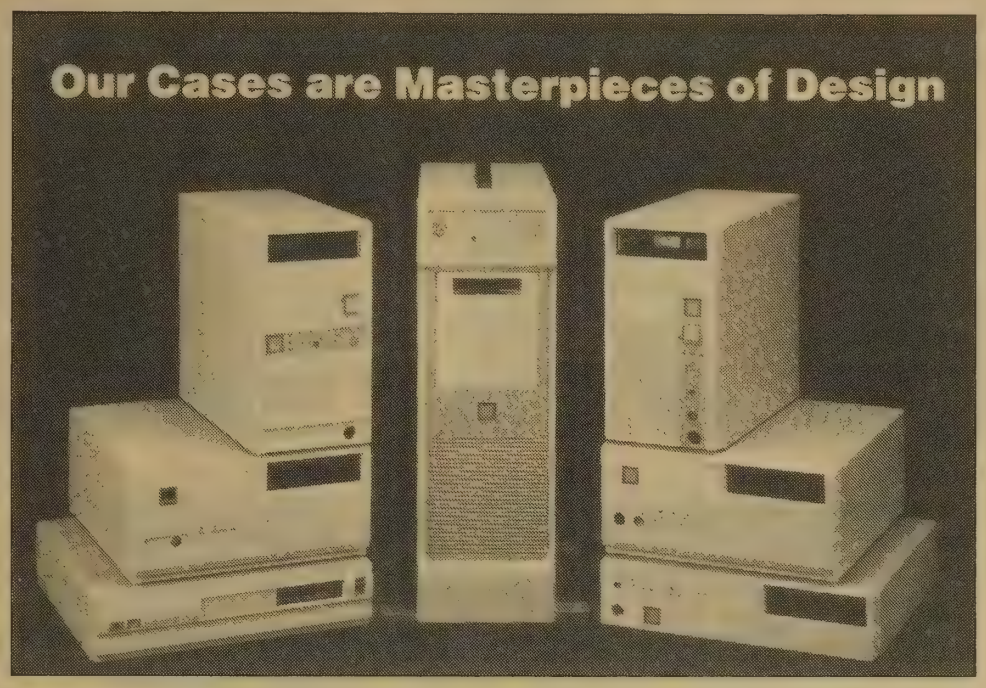

PC-901T

- Medium tower case for Baby AT, Big AT or XT compatible
- For three 5¼″ FDD, two 3½″ FDD & one 3½″ HDD
- 4 LED indicators and Turbo switch
- Patent Reset switch to prevent data loss
- With MHz display range to 99 MHz
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- 1 pc/carton/4.5 cu ft
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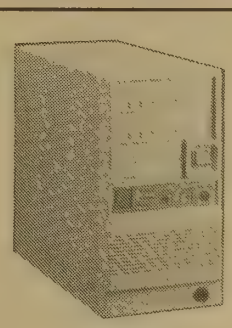

PC-601T

- Mini-tower case for Baby AT or XT compatible
- For two 3½″ FDD, two 5¼″ FDD & one 3½″ HDD
- 3 LED indicators, Turbo & Reset switch, keylock
- Patent Reset switch to prevent data loss
- 1.2 mm metal sheet
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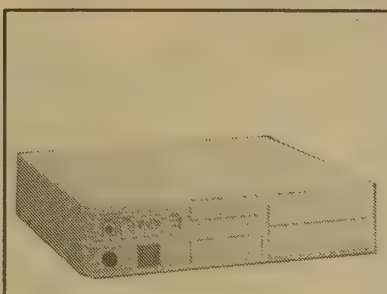

PC-303

- Slim case for Baby AT, XT or PS/2 compatible
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- Patent Reset switch to prevent data loss
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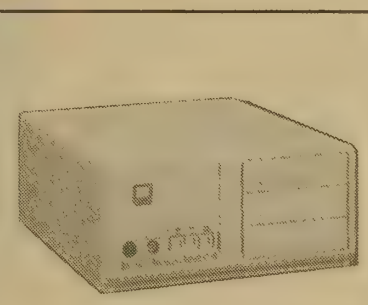

PC-103

- Slide-in case for Baby AT, Big AT or XT compatible
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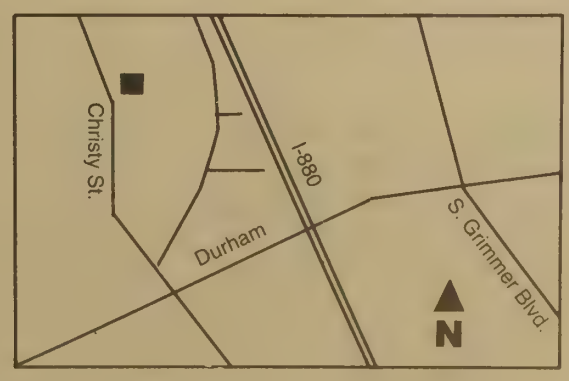
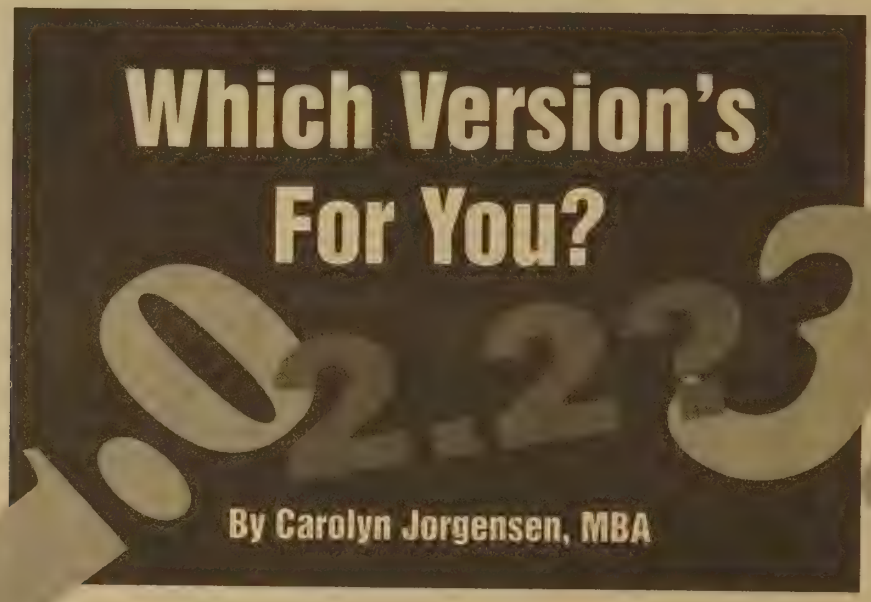


Upgrading Lotus

Which Version's For You?



By Carolyn Jorgensen, MBA

Many Lotus 1-2-3 users have been asking themselves, "Do I really need to upgrade to another version?" Since it will take any user some time to learn all the new features offered by Release 2.2 and Release 3.0, it is a good idea to identify those features before making the purchase decision—an investment of $150 if you currently own 1-2-3 Release 2. How can you determine the value of the upgrade, and decide which version's for you?

- Survey the features each version offers—do you have a clear understanding of what each offers?
- Examine your current applications—do they indicate one version over another?
- Plan your future needs—are there projects you want to implement that you can't do with your current version?
- Inventory your current computer's configuration—can it work with either version?

All these factors play an important role in your decision to upgrade. To understand what each version is about, you need to first study a list of features that each offers.

Actual unit sales of 2. and 3.0 are, of course, difficult to pin down, but according to one nationally known software vendor, January 1990 shipments of 1-2-3 Release 2.2. and 3.0 were almost identical. This makes it difficult to discern clear trends as to which version users are buying.

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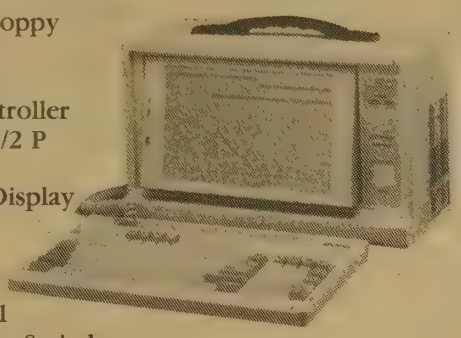

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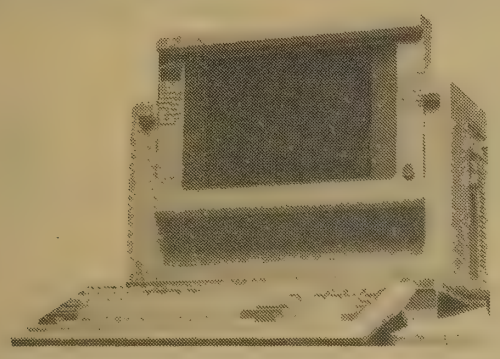

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- 1.44 Floppy Drive
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- Hard/Floppy Controller
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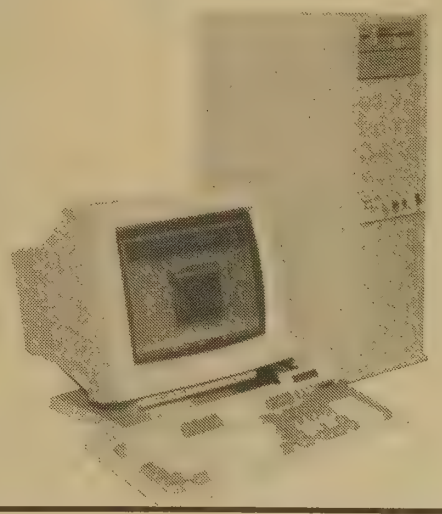

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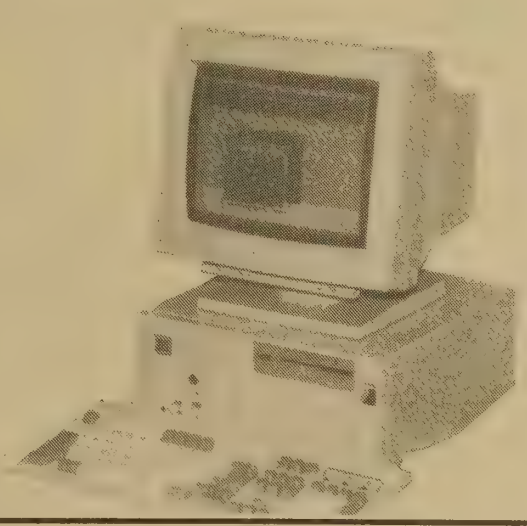

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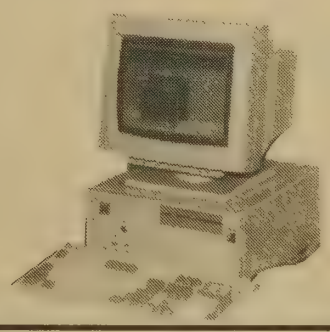
- MONO or VGA Monitor
- MGP or 16 Bit VGA Card
- 101 Keyboard
- 2 S/1 P/1 G or 2 S/2 P
- 200 W Power Supply
- Baby AT Case



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Why Two New Versions?

To view both products objectively, you first need to recognize that Release 3.0 is Lotus's intended "power" version. But with that power comes the hardware requirement for a 286 or higher machine. This alone encourages users of lower-powered computers to steer away from the product.

Many technical support people are overwhelmed with the idea of supporting two versions of 1-2-3, and if the base of users limited by hardware is significant, they may not allow more powerful users to upgrade, or offer little support. However, these users needed new features as their applications grew, regardless of their computer. For that reason, Release 2.2 was issued as an alternative to 3.0.

Mixed Bag Of Features

Although both versions offer new features that overlap, common terminology is used to describe features not necessarily identical in both versions. This has confused many users into making no choice at all, or into choosing 2.2 merely for its resemblance to 2.0 in the area of memory utilization and .WK1 file structure.

Table 1 shows a list of features identical in each version. The following are features that are similar but not identical in the two versions.

File Linking

Both 3.0 and 2.2 offer file linking. However, 2.2's capability is extremely limited. With 2.2 you can link only one cell from another file at a time. 3.0 offers the ability to link almost every possible formula you can build, including @ functions such as @SUM.

Let's say you want to build a file that combines data from three divisions into one total. With 2.2, you type three formulas, one per cell:

+<<div1.wk1>>a1
+<<div2.wk1>>a1
+<<div3.wk1>>a1

and then an @SUM function to add all three cells.

In Release 3.0, you type one formula, such as:

@sum (+<<div1.wk1>>a1,+<<div2.wk1>>a1,+<<div3.wk1>>a1)

This one formula adds all three cells from each file at once. Note that with 2.2, you will need a second formula to total each linked cell. If your application is only linking a few cells, this is sufficient. But if you need to link several cells, this approach uses more memory; a spreadsheet file takes up more memory as the number of formulas increases.

File Windowing And Three-Dimensional Capabilities

File windowing is another feature that both offer. How often have you been viewing one spreadsheet file and needed to look up data from another? Release 3.0 allows you to retrieve multiple files and modify one or more, keeping as many as three files onscreen for a true 3-D effect. A 3.0 file can contain up to 256 sheets or layers; 2.2 still is limited to one.

Release 2.2's file windowing capability is limited to two files and is shadowed in its method of using the Undo command. To view two files at the same time, you retrieve file A, retrieve file B, and press the Undo key. This toggles the screen back to file A; another keystroke toggles back to file B. This method works as long as you have enough RAM to load both, but doesn't allow you to toggle back after a change that invokes READY mode.

How often have you been viewing one spreadsheet file and needed to look up data from another? Release 3.0 allows you to retrieve multiple files and modify one or more, keeping as many as three files onscreen for a true 3-D effect. A 3.0 file can contain up to 256 sheets or layers; 2.2 still is limited to one.

Graphics

Graphics enhancements are another point of confusion. Lotus claims to have improved both versions' graphics, but in reality has only offered a few new commands to Release 2.2 without improving the visual presentation.

Most reviews state that the presentation is different for 2.2. The only presentation improvement to 2.2's graphics is the adjustment of crowded x-axis labels into a staggered position as shown in the figure. One feature unique to 2.2 not included in 3.0 is the Graph settings sheet that neatly displays all graph settings for a graph but the name. The new Graph Group command in both versions offers an easier way to set up graphs, but no new visual impact.

Release 3.0 offers better presentation through fonts, colors, and shading patterns; the ability to view both a graph and spreadsheet onscreen; instant graphs without having to set up ranges; graph printing directly from 1-2-3, including the ability to print a graph and a spreadsheet on the same page at last directly from 1-2-3; and two ways to save a graph—.PIC format and .GEM format (used by desktop publishing programs). If you are doing a great deal of graphics, Release 3.0 is the best choice to create top quality reports.

Database Power

Database commands, seldom explored by many users, offer the greatest difference between the new versions. Release 2.2 offers a Data settings sheet for Data Sort and Query, unlike Release 3.0. These are a more informational improvement and do not add new command functionality.

Release 3.0 kicks off a whole new dimension in database management—the ability to use relational databases both within 1-2-3 and from external relational files created with dBASE III. Also added is the ability to sort by up to 255 fields. Most significant is the ability to query or select records from 1-2-3 database files on disk, but not loaded into memory.

For example, suppose you have half a dozen divisions with salary information each stored in a 1-2-3 database file. You need to consolidate them into one large file to determine your projected payroll and bonus expense for the company. Before, you would use tedious File

TABLE 1

FEATURES COMMON TO BOTH LOTUS 1-2-3 RELEASE 2.2 AND 3.0

SPREADSHEET

- ✓ Range search command allows you to search and/or replace data in formulas and/or labels.
- ✓ Formulas can reference a cell from a disk-based file.
- ✓ Column widths can be set for a range of columns.
- ✓ Undo can be used to reverse almost any command or entry.
- ✓ Minimal recalculation recalculates cells only if a cell they depend on changes.

GRAPHICS

- ✓ Graph group allows you to set data ranges and legends for all ranges, rather than specifying each range separately.

DATA BASE

- ✓ There are no improvements common to both versions.

FILING AND PRINTING

- ✓ File Backup offers a method of making a backup copy from with 1-2-3.
- ✓ File Admin Table builds a list on the worksheet of files from any directory including size and date/time.
- ✓ File Admin Reservation gives network users a built-in way to limit access to files.

MACROS

- ✓ Macros can have any name less than 16 characters; a big improvement over the former limit of 26 letters and 0.
- ✓ New ACL commands include: BORDERSOFF, BORDERSON, FRAMEOFF, FRAMEON, GRAPHON, GRAPHOFF—used to control screen appearance, and SYSTEM (to invoke the /System command during a macro).

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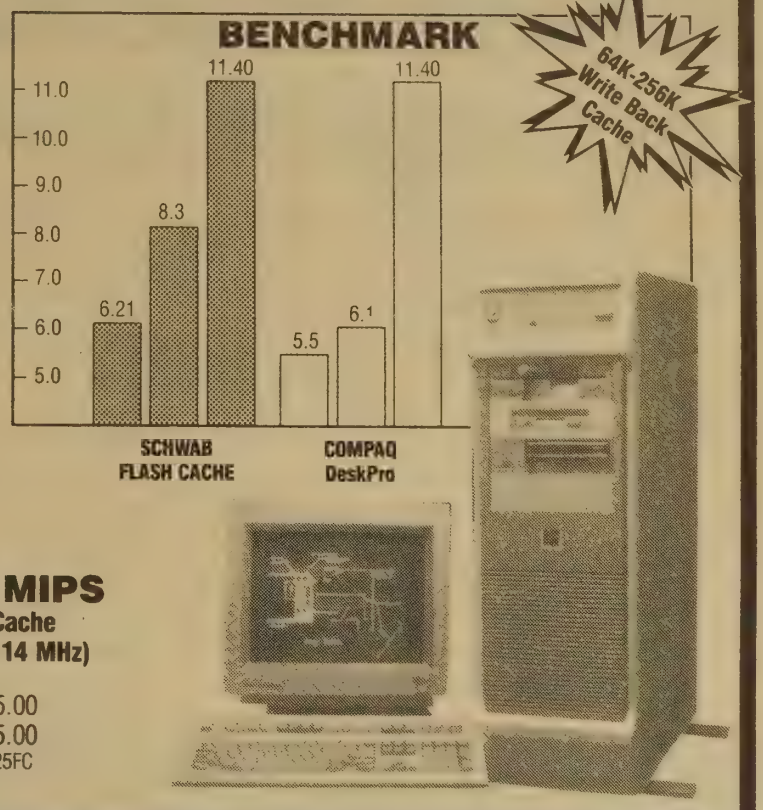

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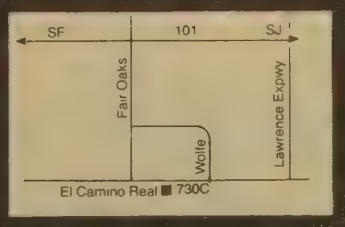

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HARDWARE
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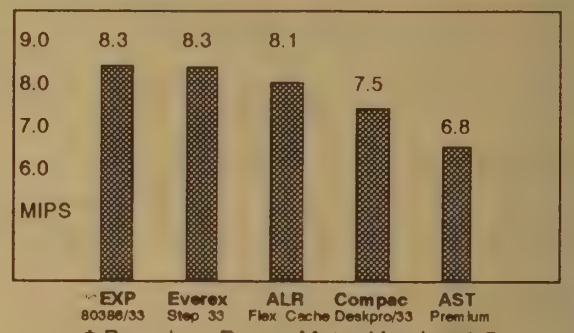

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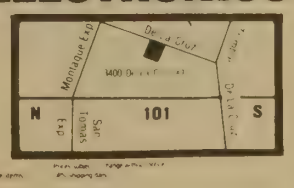

Combine and range names to cut and paste different columns. Wtih Release 3.0, you can:

- Set up an output area to copy records into a new file;
- Type only specific fields (column titles) to select data from;
- Designate the input range for the query as the 1-2-3 file on disk;
- Set a criterion to select only records from employees earning a certain salary subject to bonus;
- Extract or copy the records with one command;
- Repeat the same for the next range using a new file as the input range.

The power of selecting one or more columns from several files on disk is one not so obvious to the novice user, but can even be programmed using macros so that any user could perform such a consolidation. The source files need not even be Release 3 format—they can be 2 or 2.2. files and the process works all the same.

@Functions Increased

Release 3 offers fourteen new @ functions, such as @VDB (variable depreciation); @VARS, @DVARS, @DSTDS and @STDS to compute statistics for a sample size in a spreadsheet or database; @SUMPRODUCT to multiply then add ranges; @COORD and @SHEETS, to identify new dimensional information such as row, sheet, and column location; @D360, to calculate time periods in a 360-day year; @INFO to describe the current works session such as memory available; @ISRANGE and @ISAPP, to check for a range name and application respectively; and @DGET and @DQUERY, to copy an entry from a

Table 2

SUPPORTED HARDWARE BY VERSION

	Rel. 3.0	Rel. 2.2	Rel.2.0
COMPUTERS			
IBM PC, XT and compatibles	no	yes	yes
IBM AT and compatibles	yes	yes	yes
IBM P/S 2 Model 50, 55-SX, 60, 70, and 80	yes	yes	yes
MEMORY (total installed memory)			
640 K	no	yes	yes
1 Mb (640 K conventional, 360 K extended)	yes	yes	yes
2 Mb (640 K conventional, 360 K extended, 1 Mb expanded)	yes, but doesn't use expanded amount	yes	yes
2 Mb (640 K conventional, 360 K extended, 1 Mb extended)	yes	yes, but doesn't use extended amount	same as 2.2
PRINTERS			
HP Laserjet, +, and Series II	yes	yes	yes
PostScript-driven	yes	no	no
MONITORS			
CGA	yes	yes	yes
EGA	yes	yes	yes
VGA	yes	yes	Will work but doesn't add extra color or resolution

The power of selecting one or more columns from several files on disk is one not so obvious to the novice user, but can even be programmed using macros so that any user could perform such a consolidation.

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- H/F controller (1:1)
- 2 serial/1 parallel
- 101-key enhanced keyboard
- High quality AT case
- AT power supply

BONUS: 40MB Hard Disk (28Mil)

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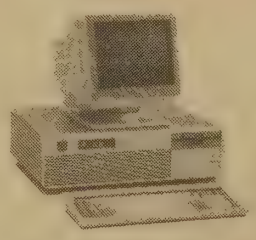
BONUS: 20MB Hard Disk



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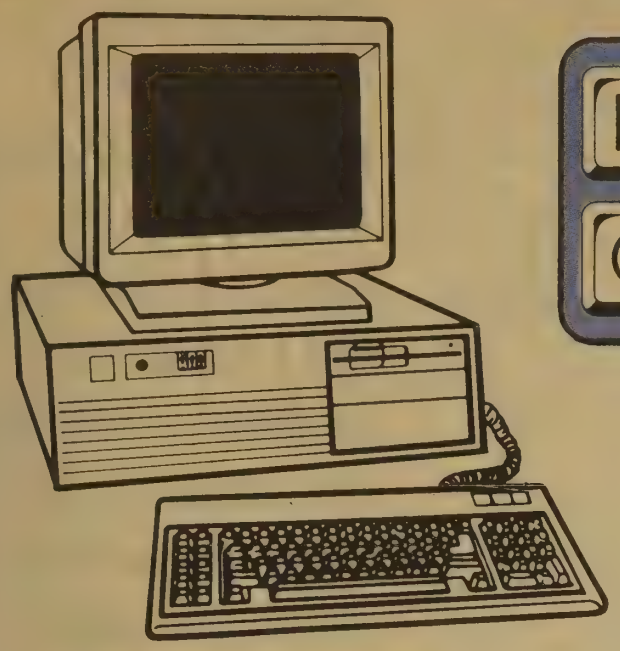

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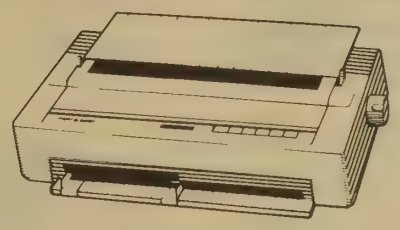

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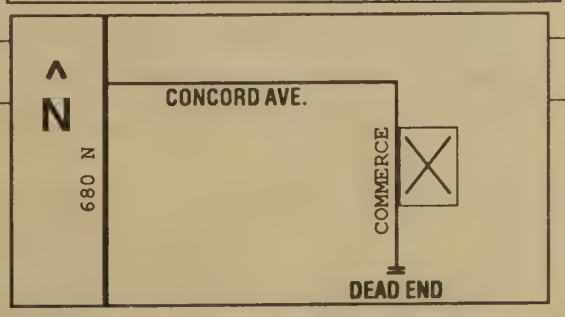

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database using criteria and send a command to an external database program such as dBASE III. Release 2.2 does not have any new @ functions.

Macros

A final area of interest to most users is the macro feature and how each version has improved it.

Although both versions offer the ability to record and edit keystrokes typed, 2.2 requires that you turn the recorder on and off; 3.0 automatically stores the last 512 characters typed continuously.

Another plus is the new macro library feature—2.2 has the ability to load a single file containing commonly used macros into memory through attaching a special utility program or add-in called the Macro Manager. 3.0 offers the built-in capability to load any number of macro files into memory directly without a second program.

Advanced Command Language (ACL) commands unique to 3.0 are APPENDRIGHT and APPENDBELOW, used to automatically extend database ranges during new entry of fields or records respectively. A new FORM command provides a more controlled approach to entering data by assigning keys routines to perform, and allowing or disallowing keys during data entry. A few new other commands in Release 3 move the user within the three-dimensional workspace.

Memory Management

The most important consideration after the CPU type (8086, 80286, or 80386) is your amount and type of RAM memory. If it exceeds 640 K, your computer resides in the world of extended or expanded memory. This type of memory is managed by a special program that conforms to the EMS (Expanded Memory Specification) version, or is often described as a memory management software. It can tell your PC whether to use one type or another. Some can reconfigure it automatically as the application loads; others you must issue a command to do so. A few do not come with the ability to switch from expanded to extended. Check your owner's manual or call the memory card vendor if you are not sure.

Expanded memory is the type most accepted by DOS applications and not usable by OS/2. To date, Release 3.0 is one of the few applications designed to work with extended memory on both DOS and OS/2. Therefore, if you already have this extra memory and are using DOS, most likely it is configured as expanded, since most applications use this type.

Extended memory is also the name given to the memory between 640 K and 1 Mb. Thus your computer has this type of memory if it contains more than 640 K installed.

In conclusion, if your computer has at least 1 Mb of RAM and is a 286-based CPU or above, you can run Release 3.0. To efficiently manage that memory, consult the manual accompanying the memory board. Table 2 shows the memory and other hardware configuration for all releases.

Cost Considerations

The final sum of weighing each factor above is the overall benefit the upgrade can provide. Although you cannot measure it in dollars, productivity, time, and performance add up. The actual dollar cost:

- The actual upgrade will cost $150—either to 2.2 or 3.0.
- A memory adaptor—from a few hundred dollars and up.
- A new computer—other programs can be added to justify the cost or it can be swapped with another user.

Total these cost considerations, and subtract them from your overall benefit. Whether the cost is minimal or great, you will be better prepared to make a decision to upgrade or not. ■

Although both versions offer the ability to record and edit keystrokes typed, 2.2 requires that you turn the recorder on and off; 3.0 automatically stores the last 512 characters typed continuously.

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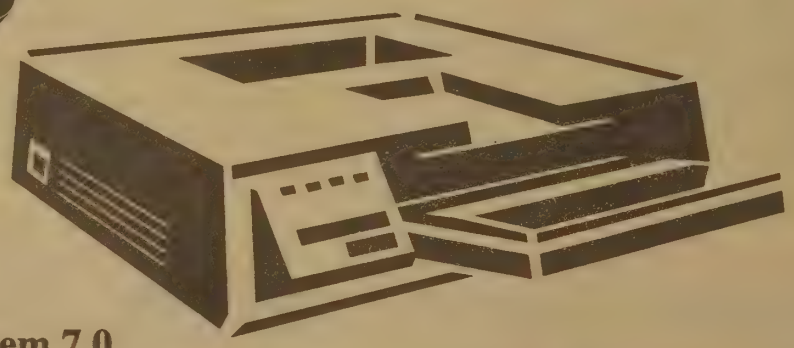

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Part 3

Multitasking With DESQview

Useful Resources, Tips And Tricks

By Lenny Bailes

In the previous two parts of this series, we've focused on the nuts and bolts of setting up a PC to run Quarterdeck's DESQview, and on the benefits DESQview users will derive from Quarterdeck's new memory management products. This part covers leftover odds and ends that you don't find in the manual.

Your Modem Is Your Best Support Tool

Gradually gaining attention as a multitasking front end for MS-DOS, DESQview is now actively discussed in national and international question-and-answer forums. DESQview conferences are carried by SMARTnet/RELAYnet and RBBS/FIDOnet. These two mail exchange networks link hundreds of hobbyist BBSes from North America to Australia.

Running under FIDOnet, DVNet is a loose confederation of nodes which supplements technical Q & A conferencing with DESQview-dedicated file areas. Since more and more people are using DESQview as their "operating system," shareware enhancement utilities have begun to appear. These user add-ons give DESQview even more power than Quarterdeck wrote into the program.

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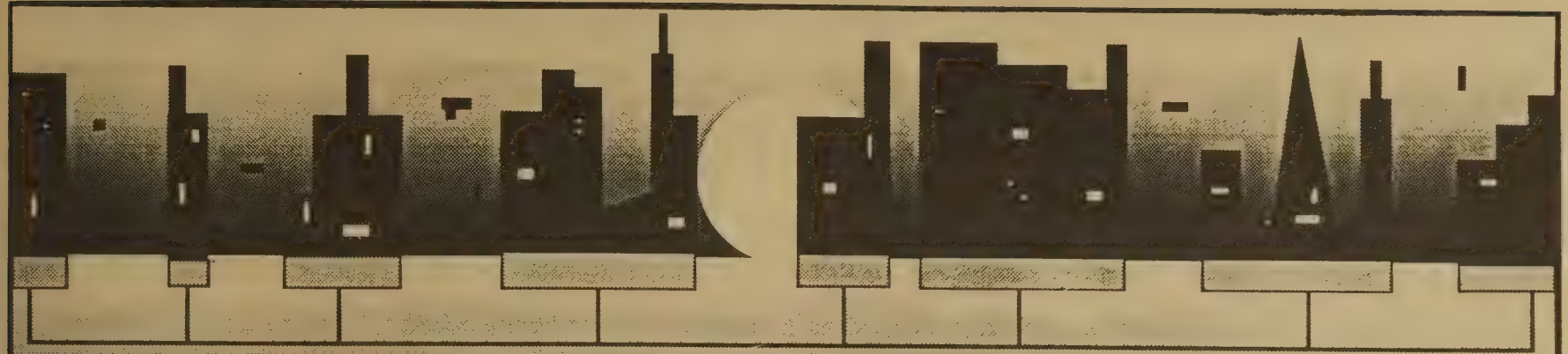

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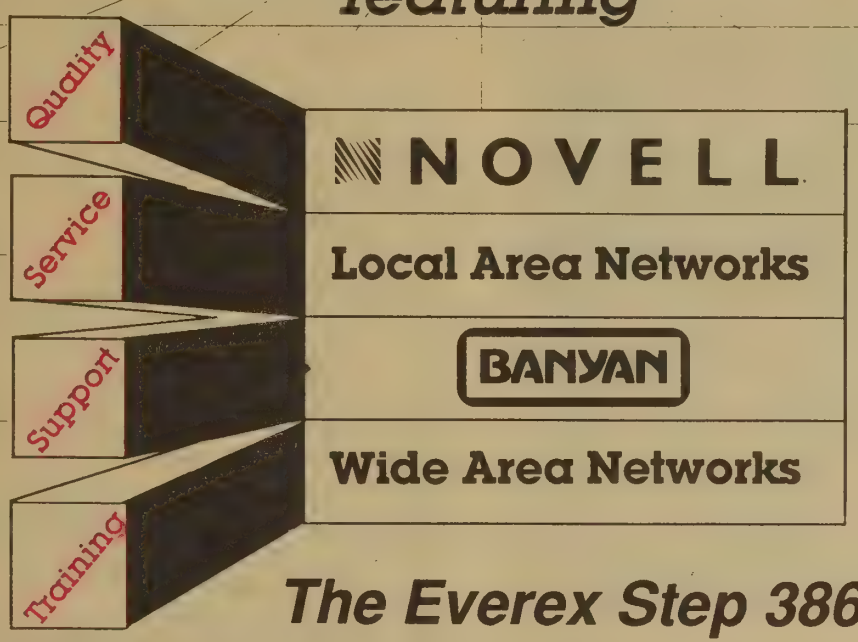

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you download shareware utilities to:

•Install pop-up calculators, calendars, appointment books, alarm clocks and/or reference tables written especially for the DESQview environment.

•Modify the main DESQview menu to include hierarchical submenus.

•Allow batch files to be run from within a DESQview window, which open and close other windows and invoke DESQview processes. Sysops can automatically open and close separate mail processing windows at designated times without interrupting user access to their BBS systems.

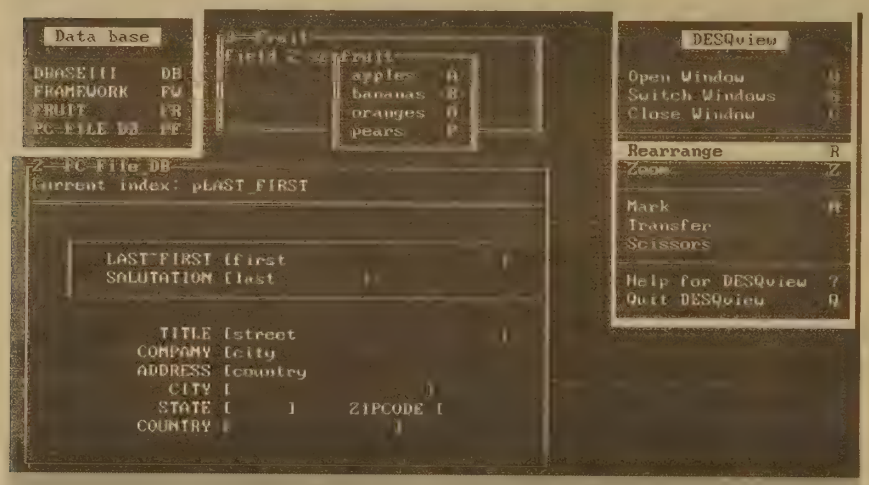
Other user-written utilities allow a window to send itself into the background, or automatically redirect screen display for stubborn programs to BIOS calls (allow them to run in small DV windows). Multitasking speed under DESQview can be increased by using watchdog utilities which monitor an idle program's demands on CPU time.

Some of these user add-ons make use of Quarterdeck's API, a programming language for the DESQview environment. Gregory Stewart's DVAPMENU is the one of the most innovative. His program lets you create nested submenus under DESQview's main "Open a Program" menu. If you have 30 or 40 applications which you run occasionally under DESQview, you can group them into categories like Word Processing, Graphics, Databases, etc., then launch individual programs from pop-up category menus.

David Thomas's Tame dramatically increases the speed of second and third programs running under DESQview by reclaiming processor time usually taken by an idle first program. Tame is designed to steal back time from CPU hogs like WordPerfect. Norton's Sysinfo benchmark jumps from 6.1 to 8.0 on my 12 MHz system when Tame is monitoring the first window in the background.

Some of the programs offered through DVNet BBS nodes are also available on Quarterdeck's own BBS. If you dial into the conferencing systems on SMARTnet and RBBSnet, you can also get up-to-the-minute feedback on word processing, desktop publishing, database software, programming and other topics.

Most of these bulletin board systems are free (though some solicit voluntary user subscriptions). Check the list at the end of this article for a node in your calling area.



DVAPMENU lets you create hierarchical submenus within DESQview's main menu.

Comparisons: DV 2.20-2.26

Quarterdeck is currently shipping the latest in a series of maintenance upgrades for DESQview 2.2. These updates are issued as engineering releases.

Some users will find little difference between the upcoming version and last year's upgrades. All of the 2.2 releases leave you the same amount of memory for running programs. Version 2.26 adds no new features, but will continue to improve stability and reliability of performance with off-the-shelf DOS applications.

V. 2.26 has about 20 more preinstalled program choices on the "Add a Program" menu. Engineering improvements include added work on high resolution video drivers, further work on mouse/video compatibility with Microsoft Word, and added compatibility with remote control terminal programs like PC-Anywhere.

A new setup option lets DESQview distinguish between keyboard shift states in different windows, supporting IBM 3270 and 5250 terminal emulation. The internal autodialer will now recognize up to four serial ports. Context sensitive help messages have been added to help the user fill in the setup boxes in "Change A Program."

For DESQview connoisseurs, here is a brief summary of changes in the upgrades issued last year:

•DV 2.2 provides about 30 K more memory for applications than DV 2.0. It introduces the ability to adjust foreground/background performance on the fly. The "Change a Program" menu allows more control over serial port status, CPU sharing, and screen virtualization with 80386 machines.

•DV 2.22 is the last version where the Memory Status window can be resized. It has some small problems with mouse/video coordination in some configurations. It supports a two-monitor Hercules-to-CGA/EGA switching system.

•DV 2.24 adds "Revive mouse" option to the menu. It has a noncritical bug with DOS's "Format" command. The graphics drivers are changed so that two-monitor support only works if you make the CGA or EGA your primary monitor.

•DV 2.25 fixes "Format" bug, and stabilizes performance with most off-the-shelf DOS applications.

•DV 2.26 has stronger compatibility with high resolution VGA video modes and better terminal support. More keys can be defined as DESQview system keys, and there are now ten settings to reconcile keyboard conflicts with other programs. Monochrome EGA/VGA graphics can now be "virtualized" in small windows on a 386. There are no new features on the main menu.

•The biggest change in the 2.26 package comes with the upgrade of the 80286 extended memory manager, QEXT.SYS., to conform to Microsoft's new standard (called XMS). The enhanced QEXT.SYS is also distributed separately with Quarterdeck's QRAM package.

XMS is a Microsoft technology which is almost certain to confuse people who've been struggling with the older issue of expanded vs. extended memory. The only visible result so far from Microsoft is a device driver called HIMEM.SYS. HIMEM.SYS lets other specially written programs access the first 64 K of extended memory as part of DOS. The XMS standard has been defined by Microsoft to do more tricks, but no applications have been written to take advantage of them yet. Quarterdeck's QEMM v.5 or new QEXT.SYS can now be freely substituted for Microsoft's HIMEM.SYS to allow DESQview, Windows 286/386 and Xerox Ventura Publisher to use the first 64 K taken from extended memory.

So Quarterdeck now allows you to gain an extra 64 K for DOS applications in three separate ways: by mapping the area immediately above 640 K from expanded memory, by mapping the extra RAM on an EGA/VGA card to this area or by allowing XMS-aware programs to use the first 64 K of extended memory. The first two options are mutually exclusive, but can be added to the third. Thus, programs which use Microsoft's XMS standard (DESQview, Windows 286/386, Ventura) may gain as much as 128 K. Programs not written for XMS can only gain DOS memory with one of the first two options.

Tweaking DESQview For Better Performance

Here are some tips for running common applications in DESQview. These tricks are gleaned from the SMARTnet conference, Quarterdeck's technical support team, and my own experience.

Most of these fine-tuning tips involve changing DESQview's startup specifications for the program. This is done by invoking "Change a Program" from the (DESQ) menu and entering information in the appropriate box. For new users, making these changes can be the most bewildering aspect of DESQview, but gaining familiarity with the control options pays off later with problem-free multitasking.

DV and Page Preview Using Hercules Graphics: WordPerfect, WordStar and Microsoft Word all allow the user to do graphic page previews. Consequently, these programs shift back and forth from "Text" to "Graphics" modes. DESQview with a Hercules card is unable to follow these shifts accurately. Once you've done a page preview, the screen may get scrambled when it shifts back to text mode.

Quarterdeck has a workaround called DVHERC.COM, which manually forces the Hercules card to return to text mode. Install DVHERC in the window with your word processor by using a short batch file as the program which opens the window.

Example for WordPerfect: Wp.Bat

DVHERC.COM
WP.EXE

When DVHERC is installed, you can restore the text screen at any time by pressing CTRL-ALT-1.

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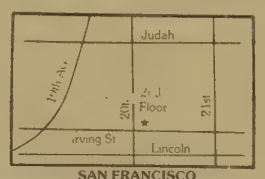

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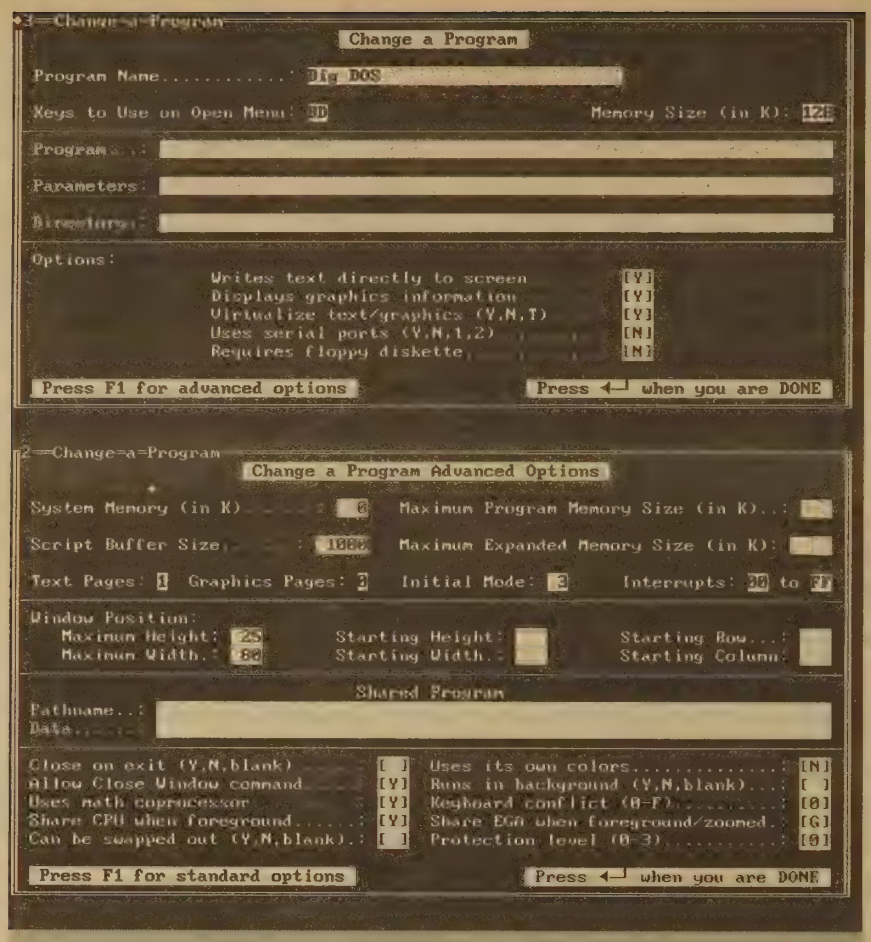
3=Change=a=Program
Change a Program
Program Name..... Big DOS
Keys to Use on Open Menu: BD
Memory Size (in K): 128
Program...:
Parameters:
Directory:
Options:
Writes text directly to screen [Y]
Displays graphics information [Y]
Virtualize text/graphics (Y,N,T) [Y]
Uses serial ports (Y,N,1,2) [N]
Requires floppy diskette [N]
Press F1 for advanced options
Press ↵ when you are DONE
2=Change=a=Program
Change a Program Advanced Options
System Memory (in K)..... : 0
Maximum Program Memory Size (in K)..:
Script Buffer Size..... : 1000
Maximum Expanded Memory Size (in K):
Text Pages: 1 Graphics Pages: 2 Initial Mode: 3 Interrupts: 20 to FF
Window Position:
Maximum Height: 25
Maximum Width.: 80
Starting Height:
Starting Width.:
Starting Row...:
Starting Column:
Shared Program
Pathname..:
Data.....:
Close on exit (Y,N,blank) [ ]
Allow Close Window command [Y]
Uses math coprocessor [Y]
Share CPU when foreground..... [Y]
Can be swapped out (Y,N,blank).: [ ]
Uses its own colors..... [N]
Runs in background (Y,N,blank)... [ ]
Keyboard conflict (0-F)..... [0]
Share EGA when foreground/zoomed. [G]
Protection level (0-3)..... [0]
Press F1 for standard options
Press ↵ when you are DONE

The Change a Program menu allows a good deal of fine-tuning for better program performance.

DV and MS Windows: Windows 286 won't run under DESQview unless DOS can open at least ten files in conventional memory. Make sure the statement Files=10 is included in your Config.sys. File allocation above 10 can be placed in high memory with the LOADHI statement.

Use the new Quarterdeck memory management software (either QEMM, v.5 or the latest QEXT.SYS) in place of Microsoft's HIMEM.SYS for extended memory management.

DV and Xerox Ventura Publisher: Ventura Publisher 2.0 is a memory hog, normally requiring at least 550 K to run. Users of VGA and EGA graphics on 286 machines may have difficulty configuring a DESQview window of that size. With Quarterdeck's new extended memory management, Ventura Publisher can run outside of DESQview in as little as 490 K of conventional memory. Inside of DESQview, Ventura Publisher will still need a 550 K window.

Quarterdeck's new QRAM may allow some extra memory to be gained with use of the Optimize and Loadhi commands. The All Chargecard (See *MicroTimes* #62) will also typically increase maximum window size by 64 K.

Another workaround is to install Ventura Publisher for Hercules monochrome graphics, if your monitor and card support it. Quarterdeck's new VIDRAM utility will automatically add 64K of memory to DOS from EGA/VGA cards used in Hercules mode.

If you're within 5-10 K of enough memory, you can also decrease the amount of system memory allotted to DESQview.

If you don't use Ventura Professional Extension, set "Maximum Expanded Memory" under "Change a Program" to 92 K. If your mouse stops working unexpectedly, it may help to change the mouse switch in Ventura's startup batch file from /M=03 to /M=02.

DV and WordPerfect: WordPerfect 4.2 will run in as little as 200 K, allowing even users with no expanded memory to open two copies simultaneously. When WordPerfect is short on memory, it will swap documents out to disk. With 4.2 and a fast hard disk, this slows performance down only slightly.

Screen writing can be speeded up by installing Quarterdeck's NOFF.SHP shared memory utility under advanced setup in "Change a Program."

WordPerfect 5.0 and 5.1 do slower disk writes. Increase the amount of memory available to these programs to avoid disk writes and speed things up.

The current version of WP 5.1 is incompatible with some versions of expanded memory. Use of expanded memory by WP 5.1 can be disabled in "Change a Program" under "Advanced Setup" by entering 0 for "Maximum Expanded Memory Size."

To avoid losing keystrokes in WP 5.1 while saving a document, set "Keyboard Conflict" under "Change a Program" to 3.

DV and WordStar 5.5: To prevent losing keystrokes and avoid other keyboard conflicts with WordStar 5.5, run WordStar's WSCHANGE program outside of DESQview and type <E> <=> to get to the patcher. Type in the label KSPEED and fill in the first eight bytes with "FF." This procedure has been reported to solve keyboard problems.

DV and High Speed Communications: The general tip is to load comm programs in the first DESQview window.

Quarterdeck's Manifest includes a benchmark which does a timing on the real alternate map set of your expanded memory card/motherboard. The manual says that a score of 400 or less on this test generally indicates that a 9600 baud modem can accurately exchange data in the background. If your EMS software can increase the number of alternate map registers, modem performance is improved.

Many DESQview users have also reported overcoming telecommunications problems by changing the UART chip in their serial cards. Replacing the 8450 or 16450 UART chip with a special NS16550 chip provides a hardware buffer for the serial port which improves high speed telecomm performance.

Problems with VGA Cards: Some VGA cards lie about the amount of high RAM address space they control. If your system locks up unexpectedly, try excluding the range C000-C7ff or C000-Caff from control by QEMM or DESQview.

DV and Lotus products: Lotus 1-2-3, v.3 requires that 384 K extended memory be reserved for it in order to run under DESQview. 1-2-3 also tries to load its graphics driver on startup. If you've disabled the graphics modes of an EGA/VGA card to gain extra memory, this creates a conflict.

You can either restore the EGA/VGA modes on your card, or use Lotus's advanced setup outside of DESQview to disable the internal graphics features.

To use Lotus Freelance 3.0 with DESQview v.2.25 and below, the complete path information to the program must be inserted into DV's program information file. Users have reported that Freelance can also be launched from within a window running Lotus's Magellan with no difficulty. ■

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RESOURCES

DESQview, v. 2.26: Quarterdeck Office Systems, 150 Pico Boulevard, Santa Monica, CA 90405; 213/392-9701. $129.95; upgrade for users of v. 2.25 is $24.95. (QEMM 386, v.5 $99.95, QEMM 50/60 $79.95, QRAM $79.95. These three packages are bundled with MANIFEST, v.1—see *MicroTimes* #65 for upgrade information)

Quarterdeck BBS (for registered users): 213/396-3904

DVAPMENU, from Gregory Stewart, available on QOS BBS and through DVNet.

TAME 210, from David G. Thomas, P.O. Box 956338, Duluth, GA 30136 (and from QOS BBS, DVNet)

Local nodes for DESQview Conference on SMARTnet:
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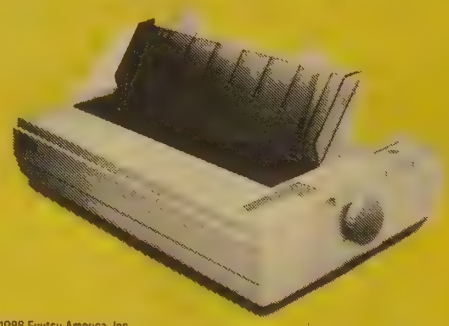

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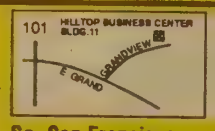

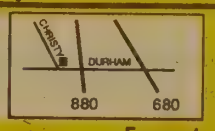

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Presenting **CONNER Drives** & FUJITSU 2611T 45MB, 25ms

CP 3044 42MB, 25MS
CP 3184 81MB, 25MS
CP 3104 104MB, 25MS

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QUIET
RELIABLE
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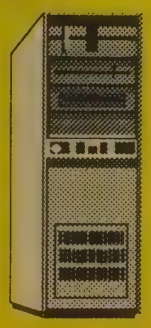

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MINI-VERTICAL KIT

★ MINI-VERTICAL CASE
★ 200W PS
★ 101 KEYBOARD
★ 1:1 HD/FD IDE CONTROLLER
★ 1.2 MB FLOPPY
★ MOTHERBOARD
★ 512K RAM EXP TO 4MB

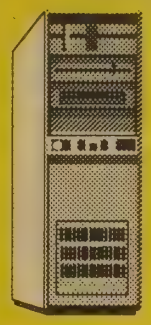
286-12 MHZ $450

386SX-16 $650

OPTIONS:
MEMORY UPGRADE TO: 1MB-$50, 2MB-$150
VIDEO: MONO 12" + MGP-$100
MONO 14" + MGP-$150
MONO VGA + 16 bit VGA-$250
VGA COLOR 640x480 (.31) + 16bit VGA-$400
SVGA COLOR 800X600 (.29) + 16bit VGA-$500
I/O: 1S/1P/1G -$30, 2S/1P/1G-$40
ASSY CHARGE: Free for Complete System w/HD & Video
HARD DISK: CONNER CP344/CP3044 OR FUJITSU M26IIT 45MB, 25ms – **Special**

USM-VANTAGE 386

MADE IN USA-2 YEAR WARRANTY



MINI-VERTICAL CASE
1MB EXP TO 8MB
1.2MB FLOPPY
101 KEYBOARD
2 SERIAL/PARALLEL PORTS
5 YEAR LITHIUM BATTERY
VIDEO: MONO 12 $100, VGA $400
MONO VGA $250, SVGA $500

$790

	BASE	CP3044	CP3184	CP3104
386SX-16	790	1150	1350	1450
386SX-20	890	1250	1450	1550
386-20	1090	1450	1650	1750
386-25	1290	1650	1850	1950

★ NAME BRAND CACHE PERFORMANCE SYSTEMS ★

AMI MkII XT 386-20

64K CACHE

MINI-VERTICAL
1MB EXP TO 2/4/8MB
101 KEYBOARD
2 SERIAL/1PARALLEL
CONNER CONTROLLER
5 YR LITHIUM BATTERY
1.2MB FLOPPY
FOR 25MHZ-ADD $300

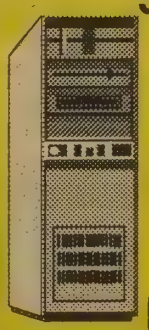
$1390

	BASE	CP3044	CP3184	CP3104
BASE	1390	1750	1950	2050
MONO	1490	1850	2050	2150
VGA	1790	2150	2350	2450
SVGA	1890	2250	2450	2550

MICRONICS

386-25 ASIC/ICP

LM=43.5MHZ



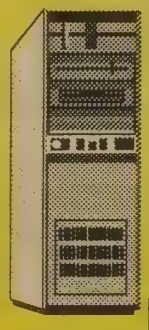
MINI-VERTICAL/DESKTOP
1MB EXP TO 4/8/16MB
101 KEYBOARD
2 SERIAL/PARALLEL
CONNER CONTROLLER
1.2MB FLOPPY

$1690

	BASE	CP3044	CP3184	CP3104
BASE	1690	2050	2250	2350
MONO	1790	2150	2350	2450
VGA	2090	2450	2650	2750
SVGA	2190	2550	2750	2850

ORCHID

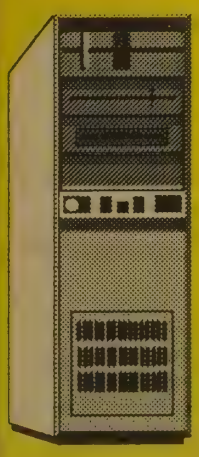
PRIVILEGE 386-25C



2 WAY SET ASSOCIATIVE CACHE
DESKTOP CASE
1MB EXP TO 16MB ON BOARD
101 KEYBOARD
1.2MB FLOPPY
2 SERIAL/PARALLEL
CONNER CONTROLLER
5 YR LITHIUM BATTERY

$1690

	BASE	CP3044	CP3184	CP3104
BASE	1690	2050	2250	2350
MONO	1790	2150	2350	2450
VGA	2090	2450	2650	2750
SVGA	2190	2550	2750	2850



VERTICAL 386-33 CACHE FROM $1790

1MB 386-33MHZ	BASE	CONNER 105MB	ESDI 150MB,14MS
AMI MkII 386-33	2190	2850	3390
MICRONICS 386-33 ICP	2090	2750	3290
HAWK/FC/ECS 386-33C	1790	2450	2990

486

AMI GEMINI 486-25 64K CACHE
AMI VOYAGER 486-25 128K CACHE
MICRONICS 486-25 64K/128K/256K CACHE

VIDEO OPTIONS AND UPGRADES

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NEC 3D $590
SONY 1304 ....$650
GENOA 6300 ..$190
SEIKO 1440.....$550
ORCHID PRODESIGNER 256K ... $210
PARADISE/VIDEO 7 1024i $230
ATIWONDER $250
LOGITECH C9 SERIAL $60 HIREZ BUS $70
US ROBOTICS/EVEREX 2400B MODEM $130 MNP5 $160
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Cash prices reflected.
Restocking charge 15%

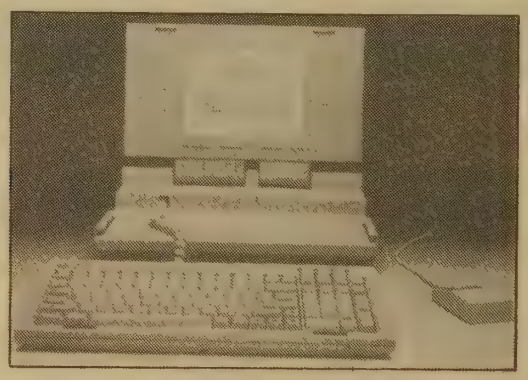
Buyers Guide

IMPULSE INTRODUCES 386SX LAPTOP

Impulse Systems has unveiled their new 386SX laptop computer, the Impulse SX, measuring 13.2" x 13.2" x 3.2" and weighing 14 lbs. The Impulse SX runs at 16Mhz with 0 wait states, comes standard with 1Mb RAM and is user upgradeable to 5Mb using low-cost 100ns SIMM memory modules. The 640 x 480 pixel paper-white backlit VGA LCD display is switchable to an external VGA monitor through an external connector. Similarly the detachable 82-key keyboard may be replaced by any AT-standard keyboard. Features on the Impulse SX include a 1.44Mb, 3.5" diskette, a 25ms 40Mb hard disk, 2 serial ports, 1 parallel port, an external floppy diskette port, and a retractable carrying handle. A socket is provided for an optional 80387SX numeric coprocessor. ($5199) Impulse Systems Inc., 85 Burnett Avenue, San Francisco, CA 94131. (415)641-9197.

ALTIMA TOPS THE "ONE" LAPTOP

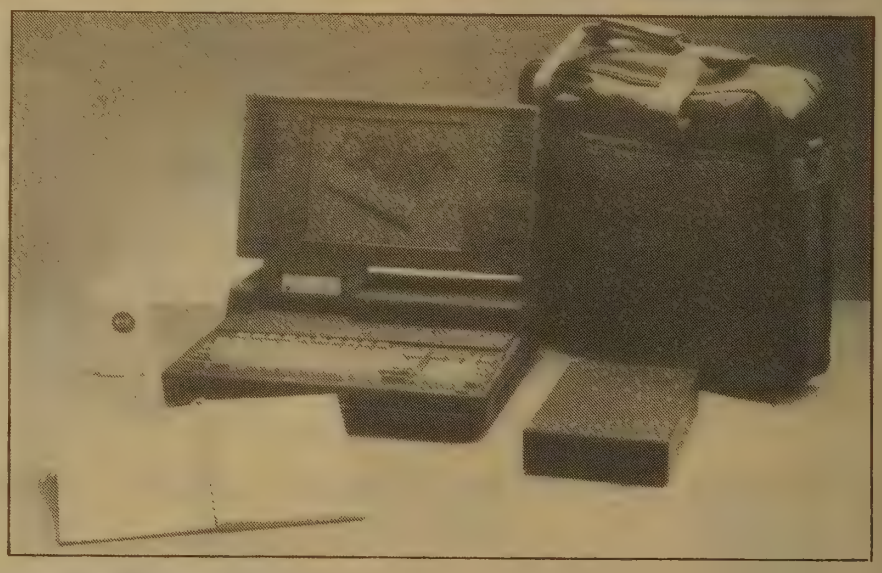
Altima adds to its family of high-end portable computers with the Altima Two, featuring a 640 x 480 resolution, and paper-white backlit LCD screen. With automatic grayscaling, the video automatically maps VGA colors up to 32 gray levels. A connector for output to an external VGA or monochrome is also included.



Building on the Altima One, this new model has features that include a full-sized, full-function, detachable 101-key keyboard which incorporates a numeric keypad and a built-in Hayes-compatible 2400 baud modem. The Altima weighs 15 lbs. and measures 15.7" x 11.8" x 3.9". ($4,499) Altima Systems, Inc., 1390 Willow Pass Road, Suite 1050, Concord, CA 94520. (415)356-5600.

READING PORTABLES FROM THE ROAD

Mitsubishi, a leader in providing reliable high-performance products, has a laptop that spares nothing for the sake of portability. The mp268L has the largest, brightest display available on a laptop. Its 11" backlit Neutral Twisted Nematic (NTN) black-and-white LCD can be read from several feet away in any light. The 1.44Mb capacity diskette drive is complemented with 4 expansion slots and an internal disk drive. The mp268L weighs 14.6 lbs, measures 12.3" x 14.2" x 3.5" and has a one-year manufacturer's limited warranty. Mitsubishi Electronics America, Inc. 991 Knox Street, Torrance, CA 90502. 1-800-556-1234, ext. 25, in California, 1-800-441-2345, ext. 25.



MICRO EXPRESS BYTES LITE

The Lyte-Byte 5400 by Micro Express is a 386SX laptop with a high resolution (640 x 480 pixel) VGA gas-plasma display, giving the user up to 16 shades of grayscale on the screen. Easily used anywhere around the world, the Lyte-Byte 5400 accepts 90-270 V-ac and 47-63Hz. The computer weighs 15 lbs., measures 14.8" x 13.6" x 3.8" and comes with a sturdy carrying case. Standard features include 1Mb of RAM, a 40Mb fast hard disk and a 1.44Mb, 3.5" floppy disk drive. A special function key allows the user to enhance the display for better readability. Readability is further improved by the ability to tilt the display 130 degrees to eliminate glare. The keyboard contains 85 full-size keys, including a full numeric keypad. It comes with both a 15-month warranty on parts and labor and a 30-day moneyback guarantee. If anything should go wrong, a toll-free customer service support line is available. Further, Micro Express offers 48-hour service and express overnight shipment paid both ways by the company when a repair is necessary. ($2,999) Micro Express, Inc. 1801 Carnegie Avenue, Santa Ana, CA 92705. (714)852-1400. FAX: (714)852-1225.

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Link multiple users via plug-in boards

For HP LaserJet Series II and IID

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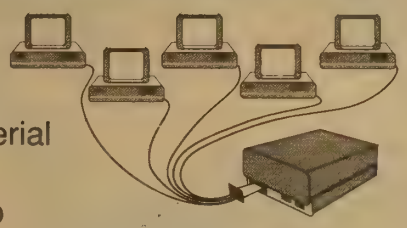
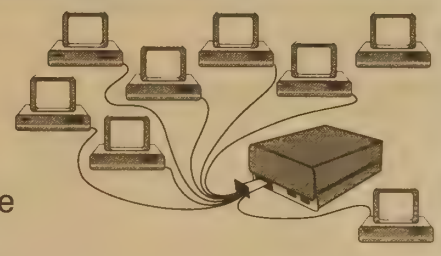


- 5 simultaneous inputs -4 serial plus 1 parallel
- 265K buffer -expandable to 512K/1.25MB
- Serial speed to 57,600 baud
- Dynamically allocated spooling buffer
- PC and Macintosh compatible

$349

Model 80



- 8 simultaneous serial inputs
- 256K buffer -expandable to 512K/1.25M
- Serial speed to 57,600 baud
- Dynamically allocated spooling buffer
- PC and Macintosh compatible

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Spooled 256K Memory-Upgradeable to 1.25MB

•Simple
•Automatic
•Economical

Model S4

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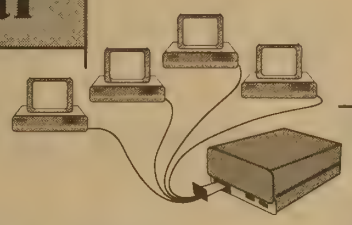
- 4 serial automatic switch inputs
- Serial speed up to 115,200 baud
- PC and Macintosh compatible

Model P4



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•Flexible

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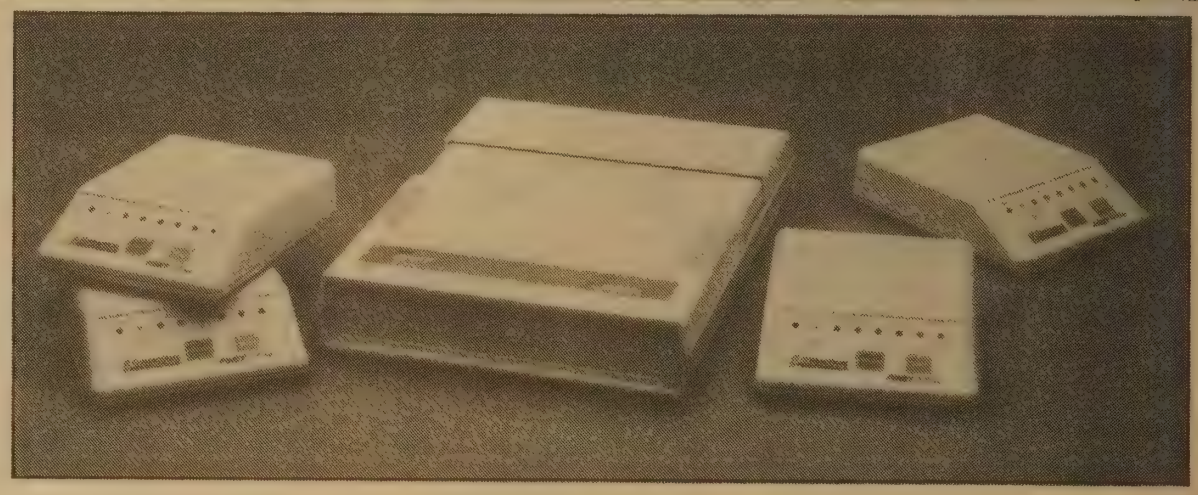
Buyers Guide

PARTICULARLY PRACTICAL PERIPHERALS

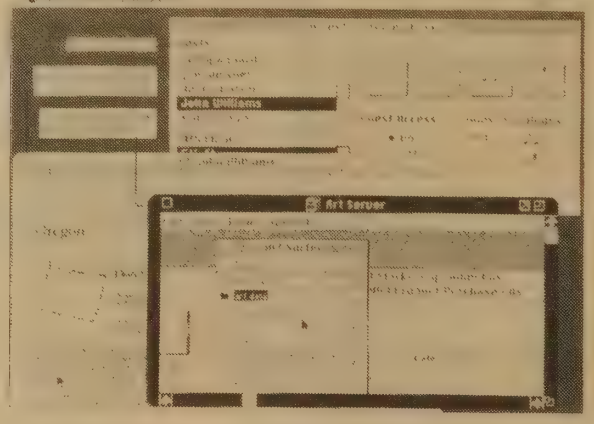


The new P/Net by Practical Peripherals offers a way to link and manage computers and computer support devices. The P/Net system is capable of tying together a variety of printers, modems, plotters and other peripheral devices to as many as 16 computers. An individual peripheral device can then be accessed by any connected computer. When connecting several printers, for example, P/Net, which has an expandable memory of up to 4Mb, automatically manages a print queue.

P/Net uses economical modular telephone cable for all interconnection of the port pods and main network unit. High-speed serial communications techniques and components also allow reliable data to be transferred up to 5,000 feet. The basic system package consists of a P/Net System Unit, a P/Net Power Unit, four I/O P/Pods, four 75-foot modular phone cables, four P/Pod power packs, and an operations manual. (The suggested list price for the basic package is $1695, with each additional P/Pod $189.) Practical Peripherals, Inc., 31245 La Baya Drive, Westlake Village, CA 91362. (818)706-0333.

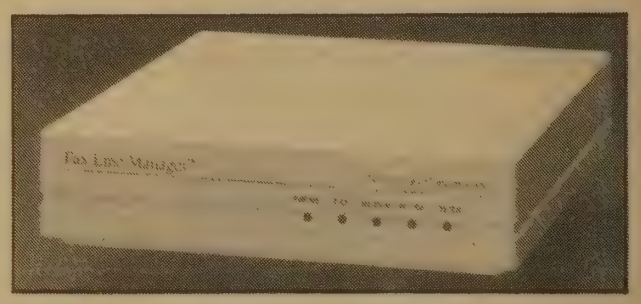
TIMBUKTU 3.1: THE MULTIFINDER OF NETWORKS

Farallon recently introduced a set of enhancements for Timbuktu, their popular network software for screen-sharing and file-transfer on the Macintosh. Timbuktu 3.1 allows users to observe and control the screen of multiple computer hosts simultaneously, each as a separate, resizeable window. All host windows are updated "live," regardless of which window is selected and active. The user can now harness the power of the network to operate any number of computers at once.



Another new Timbuktu feature is the guest menu, which groups a number of functions in a pull-down menu near the right end of the screen's menu bar. The user can manage all guests for this menu, instantly changing a controller to an observer, or vice versa, simply by clicking an icon. The menu also provides a log of past and current visitors to the user's computer. The "Wait for Guest" feature, residing in the new guest menu, allows a user to share the computer with another without revealing a password. This feature is especially useful for user support or impromptu conferences.

Suggested retail price for Timbuktu on one Macintosh is $149. A 30-pack is $1,995. Volume pricing for sites of more than 100 are available. Upgrades to registered 3.0 owners will be mailed free of charge. Farallon Computing, Inc., 2000 Powell Street, Suite 600, Emeryville, CA 94608. (415)596-9100.

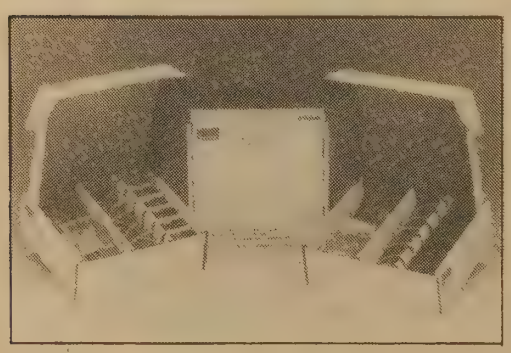


MANAGING TELEPHONE VOICE/DATA TRAFFIC

Phone, fax, modem and answering machine—all on one line. As fax boards become standard equipment on PCs, the phone lines are becoming increasingly tangled. One solution is to provide a switch that will route voice calls to the telephone and fax calls to the fax machine.

The new 200 Series of Technology Concepts' Fax Line Manager does just that. It answers incoming calls, determines whether it's a fax, modem or voice call. The 200 Series can be programmed for nine separate functions from a telephone keypad. The range of programmability makes it compatible with any phone setup, including answering machines. For example, in addition to the home-to-office adaptability, users can choose how many times (from 0 to 99) the phone will ring before the device automatically rolls the call over to the fax.

The Fax Line Manager Model 202 offers 2-function voice/fax, voice/modem or fax/modem switching for $169. The Model 203 supports full 3-function voice/fax/modem switching for $299. Technology Concepts Inc., 951-2 Old County Road, Suite 150, Belmont, CA 94002. 1-800-669-1411, (415)349-0900.



NETPACK 12 SPEARHEADS NUVOTECH

Forging further into the AppleTalk connector market, Nuvotech has introduced the NetPack 12, a new LocalTalk network package. NetPack 12 provides the hardware and accessories necessary to connect up to 12 nodes onto an AppleTalk network. It is available in either a TurboNet or TurboNet ST version, Nuvotech's two LocalTalk connector models, utilizing standard twisted-pair telephone wire and RJ-11 modular connectors. Both support AppleTalk systems spanning up to 5,000 feet in daisy chain, trunk or star topologies, and are compatible with LocalTalk and other third-party telephone wire-based connectors. The TurboNet ST connector introduces the features of Distributed Signal Dependent Damping and noise reduction circuitry to the AppleTalk connector market.

The TurboNet has a suggested retail price of $395 and $495 for the TurboNet ST version. Nuvotech Inc., 2015 Bridgeway, Suite 204, Sausalito, CA 94965. (415)331-6445.

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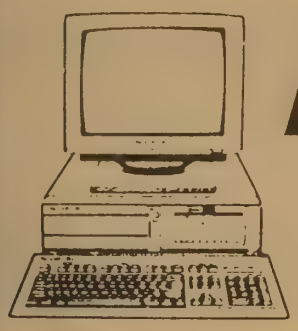
PACKARD BELL 386SX
COLOR VGA SYSTEM



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1 MB LIM 4.0 Compatible RAM
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286-12 VGA SYSTEM

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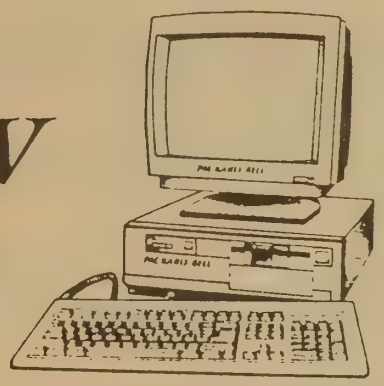

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Packard Bell 14" VGA Color Monitor w/Stand
2 Serial & 1 Parallel Ports Standard
4 16-Bit Open Expansion Slots

101-Key Enhanced, AT-Style Keyboard
Real Time Clock/Calendar & Battery Back-Up
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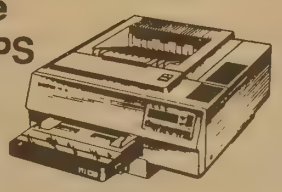

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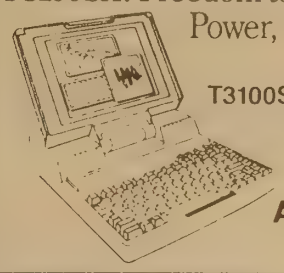

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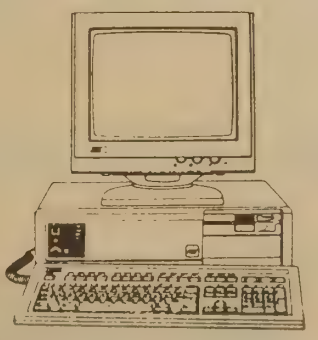

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Buyers Guide

MEGADAT STORAGE SYSTEM BACKUP FROM GIGATREND

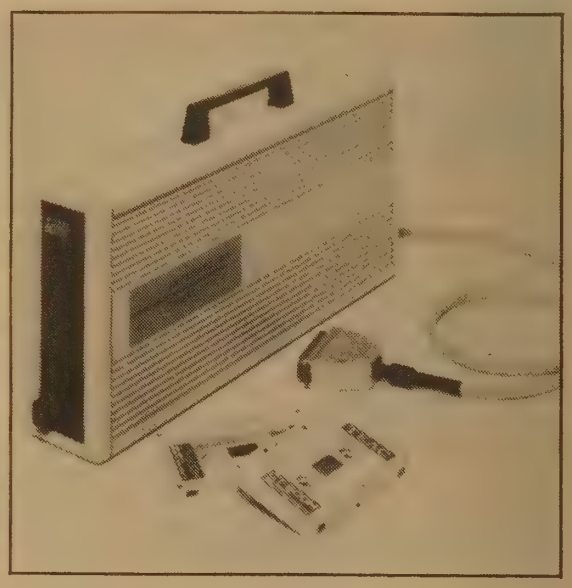
GigaTrend Inc., a leading manufacturer of high capacity 4mm DAT tape storage systems, has added a new 700Mb 4mm DAT storage system to its family of products. The MegaDat storage system for networks and standalone backup utilizes an AT-Bus interface and is available for DOS workstations and Novell NetWare 2.0a or higher. An IBM Micro Channel version will soon be available.

MegaDat is packaged complete with its own DOS and LAN backup software. The software is completely menu-driven, permits context-sensitive help, automatic installation, and a file exclusion feature. Two features common to all GigaTrend DAT products are included: a random file access time of under 60 seconds and a digital recording error correction technique for maintaining high data integrity.

Retail prices for the drive begin at $2,750 for the internal version and $2,950 for the external tabletop version. GigaTrend Inc., 2234 Rutherford Road, Carlsbad, CA 92008. (619)931-9122. FAX: (619)932-9959.

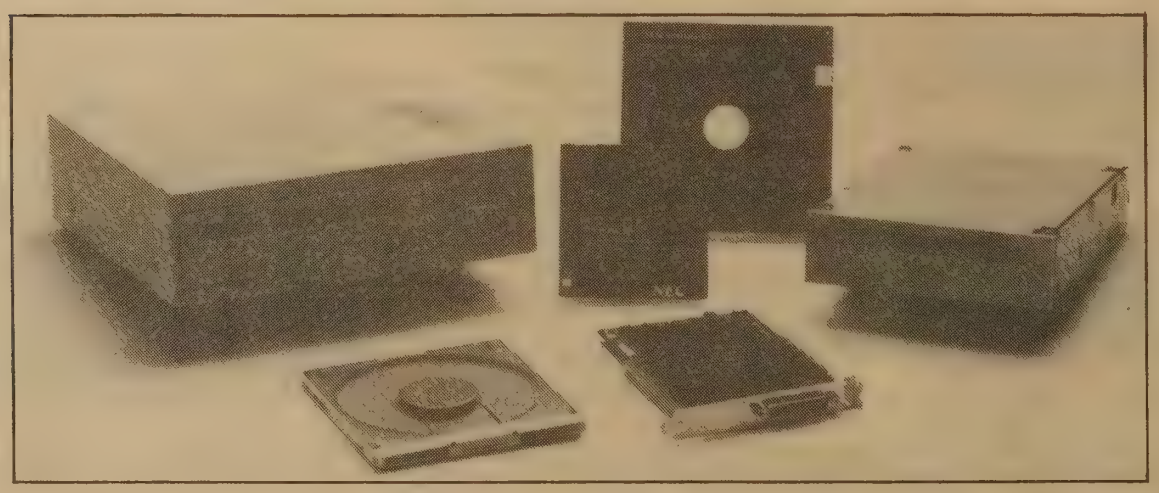
ON THE ROAD WITH TAPEXCHANGE

The TapeXchange 60TX, by Interpreter, Inc., is a portable tape backup system that plugs directly into the parallel printer ports of IBM and compatible PCs. The system provides full tape backup functionality for any IBM XT, AT, PS/2 or compatible without an added controller card, adapter kit or special configuration of the host machine. It is ideal for laptops, office work groups, and service departments. TapeXchange 60TX utilizes high-density cassette tapes capable of storing up to 60Mb. Multiple backup options include total disk, specific directories and files, date modified and archived files. The system backs up and restores 20Mb in 6 to 7 minutes. ($1,289) Interpreter, Inc., 11455 West 48th Ave., Wheat Ridge, CA 80033. (303)431-8911. FAX: (303)431-9056.



NEC CD-ROM READERS PROVIDE IMPROVED PERFORMANCE AND CONNECTIVITY

NEC Technologies has introduced two new CD-ROM readers, the Intersect CDR-72 external CD-ROM reader and the Intersect CDR-82 5.25" internal CD-ROM reader. Each model is equipped with a SCSI (Small Computer System Interface) 50-pin connector port allowing extensive computer compatibility, including laptops. Both the Intersect CDR-72 and CDR-82 provide IBM High Sierra, Apple Macintosh HFS, ISO 9960 data compatibility and Macintosh Hypercard support, along with industry standard cartridge design. A new power supply allows operation in both 120V and 220V environments. Data transfer rates have been improved to 150K per second in continuous read and 1.5Mb per second in burst mode. In addition, these CD-ROM readers can be attached to most local area networks, enabling LAN users to share access to these devices.



The suggested list price for the CDR-72 is $999, and $899 for the CDR-82 (excluding interfaces). NEC Technologies, Inc., 1255 Michael Drive, Wood Dale, IL 60191. (708)860-9500.

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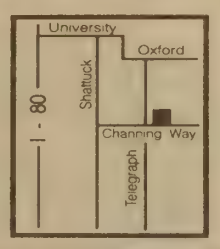

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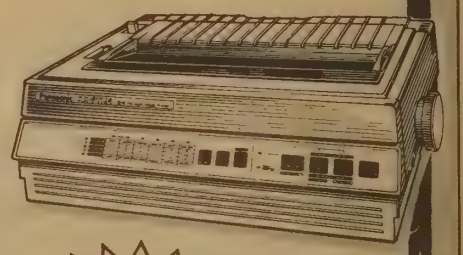

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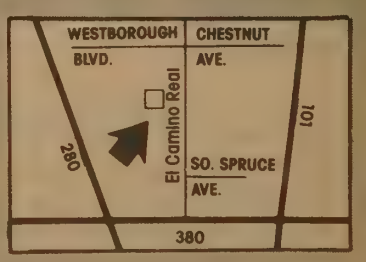

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BY BENNETT FALK

What Is Success? or Why UNIX Is Not UNIX

By Bennett Falk

I don't want to be troublesome, but UNIX is beginning to cause me philosophical difficulties. I have always been an empiricist at heart, and for a long time, if someone walked up to you on the street and started talking about UNIX, you could be certain they were talking about an operating system that actually ran on a computer.

You might have to ask (if you couldn't guess from the way your interlocutor dressed) which variety of UNIX was meant: AT&T UNIX or Berkeley UNIX, or XENIX. Even this, however, was basically an answerable question. And once the "Which UNIX?" question had been answered, you and the person you were talking to were comfortably situated in a world of real things.

It Started At Bell Labs...

UNIX started life in 1969 as a project of Bell Laboratories to provide a congenial working environment for software engineers and the clerical staff that supported them and to explore some novel ideas about hierarchical filesystems and time-sharing. The "congenial working environment" evolved into an open-ended set of software tools that could be endlessly recombined to do new and interesting things. The "novel ideas" developed into a sophisticated operating system kernel which conveniently works behind the backs of the users.

The first major step in the development of UNIX was to "port" the operating system from assembly language into C. At the time, C was a new thing, a language that combined the low-level control and efficiency of assembly language with the processor independence of FORTRAN or BASIC. Once the operating system had been rewritten in C, it could be moved to nearly any hardware platform capable of supporting a C compiler. The operating system took on a life of its own, independent of the limitations of the hardware on which it was originally developed.

Copyright © 1990 by Bennett Falk. All rights reserved. *Bennett Falk lives in the Bay Area, writes when he can, and hopes for the best. He works for Sybase, but the opinions and attitudes expressed here are his own.*

And Then It Got Complicated...

The idea of a portable operating system that could be provided in source code form acquired a devoted audience among research institutions; by the late 1970s, the University of California at Berkeley was becoming a center for UNIX development.

Also in the late 1970s, UNIX was beginning to have some commercial appeal, and a number of vendors undertook ports of UNIX with the intention of marketing a run-time system.

The commercial software vendors required that AT&T distribute stable UNIX releases. The research institutions, on the other hand, wanted "interesting" software. These conflicting demands produced a series of organization changes and software releases at AT&T.

The UNIX Support Group was formed as a separate entity from Bell Laboratories and was responsible for the release of System III (1982) and System V, Release I (1983). USG was eventually replaced by the UNIX System Development Laboratory, which produced System V, Release 2 (1984), and AT&T Information Systems, which produced System V, Release 3 (1987), and finally by UNIX International which produced System V Release 4 (1989).

Berkeley UNIX

The cultivation of System V's commercial potential has dictated a less ambitious research effort from AT&T, and consequently many of the technical innovations in UNIX over the last decade are products of UNIX development at Berkeley.

As with the original UNIX, the developments at Berkeley combined a commitment to a convenient user environment with an interest in esoteric features. On one hand, there were changes that affected users directly, such as the Berkeley utilities ("more," the "vi" editor, and the C-shell) and modified versions of AT&T utilities ("ps" is a good example).

On the other hand, there were technical innovations that may not be immediately obvious to the casual user. These included implementations of 32-bit addressing, demand-paged virtual memory, support for the TCP/IP network protocol, job control, symbolic links, and sockets for interprocess communication.

Though UNIX development at Berkeley has been primarily a vehicle for research, Berkeley UNIX enjoys some very powerful advocates (DEC and Sun Microsystems, for example) in the commercial market.

The cultivation of System V's commercial potential has dictated a less ambitious research effort from AT&T, and consequently many of the technical innovations in UNIX over the last decade are products of UNIX development at Berkeley.

In recognition of the commercial viability of the Berkeley product, System V incorporates most of its features, but typically these are not simply borrowed from Berkeley UNIX ("vi" may be an exception to this), but implemented in a new way. Thus System V's approach to paging is different from that of Berkeley UNIX; interprocess communication is handled by streams rather than by sockets, job control is achieved through shell layering, and "pg" is used to display a file one screenful at a time.

Dawn Of The Mutant Variant

The dichotomy between Berkeley UNIX and System V can be a very frustrating thing for users. But the users' frustration has not prevented vendors from carrying out the original UNIX imperative by porting features from both systems to produce new hybrids. These hybrids account for the great degree to which UNIX has penetrated the "workstation"

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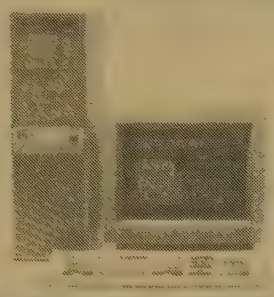

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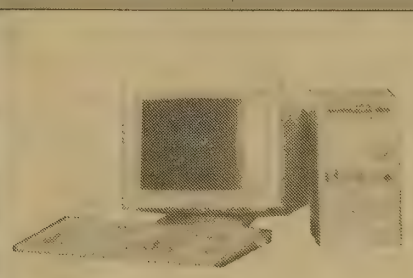

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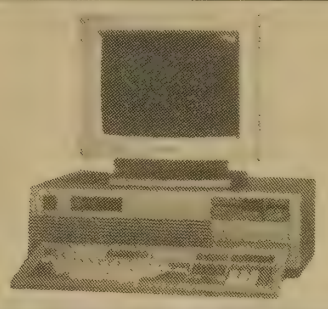

HSI 386SX

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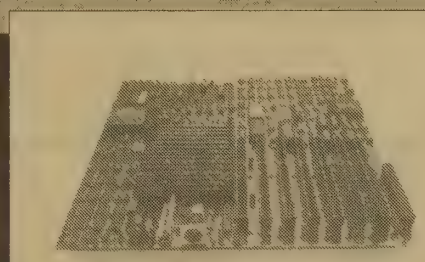

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- MIPS: 11.104

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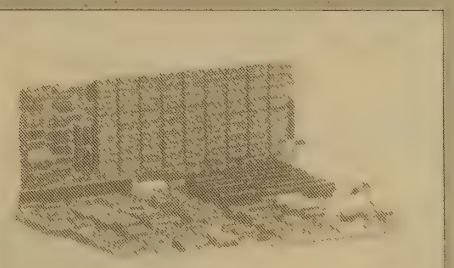

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and "small to mid-sized multi-user computer" markets.

While having a large share of the market counts for success throughout most of the computer industry, the success of UNIX has been a mixed blessing. There are so many different UNIXes in distribution that the application programmers find out very quickly
that UNIX is never just UNIX, and the business of porting software from one platform to another is very expensive. Almost inevitably the ported application (whether it's a word processor or a spreadsheet or a database manager) behaves just a bit differently on each new platform, and so the costs of maintaining the application also increase.

Standards

Now once the economic considerations of software vendors have been introduced, we begin to leave the world of real things. In the UNIX world there is tremendous pressure for standardization, and it is important to realize that this pressure does not originate from frustrated users who can't remember whether to type "ps -aux" or "ps -ale". The move to standardize comes from a fundamental business impulse to cut costs. This means that standards, when we have them, will be the result of political negotiation and not technical innovation.

The next challenge for people interested in UNIX will not be mastering the differences between Berkeley UNIX and System V, but mastering the differences between real software and the standards that are supposed to describe it.

The preferred form for UNIX standards is the "interface definition" (see AT&T's three volume System V Interface Definition (SVID), for example), a document that exhaustively describes the legal inputs and expected outputs for some software product. The SVID is a far cry from the authoritative source code distributions that used to come from Bell Laboratories. The SVID, which nowhere contains the tradename UNIX, describes an elaborate black box of which UNIX System V is but one example.

More recently, the Institute of Electrical and Electronics Engineers (IEEE) has produced the Portable Operating System Interface for Computer Environments commonly known as the POSIX standard. To date one volume of the standard, describing a standard interface to basic input/output, process creation and filesystem access services for application programs written in C, has been published (IEEE Standard 1003.1-1988). Future volumes will contain standards for UNIX shells and facilities, real-time extensions of UNIX, ADA and FORTRAN language bindings, "trusted system" capabilities, network interfaces, and system administration tools. There is no plan at the present time to include a standard for graphical user interfaces in the POSIX collection.

POSIX is not a piece of software, it's a book that describes how software is supposed to work. The book can be ordered from the IEEE Service Center. Be sure to ask for the standard by number, 1003.1. The cost is $32. I asked for the POSIX standard and received two copies of a very dry monograph about Power Motor Synchronization. The full address is:

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The POSIX book contains a description of a standard interface produced by a committee of concerned engineers (some participating as individuals and others representing institutions).

Strictly speaking, the POSIX standard is not something to be implemented; it is simply an ideal to which real systems may claim some degree of compliance. Part of the standard is a definition of the various degrees of compliance, and it's freely admitted that none of the "historical implementations" of UNIX conforms to the standard completely.

It's Not Software Any More...

Yet because POSIX isn't a piece of software, there's no way to sit down at a terminal and see for yourself just how POSIX differs from System V or 4.3 BSD or Version 7.

You see the source of my philosophical difficulties: the progress of UNIX from source code distributions to binary distributions to books about how the software should behave is an alarming trend away from the stuff that's real toward something that is, well, "meta." This sort of thing has always caused distress among empiricists.

Fortunately, the authors of POSIX perpetuated the strange sense of humor that exists in the UNIX community. In producing the standard, the POSIX Working Group sponsored a "WeirdNIX" contest as an exercise in destructive QA for the standard. The working group solicited technically legal interpretations of the standard that violated the standard's intent. Prizes were offered for "best" (i.e., likely) misinterpretation and "most demented" (violating common sense).

The standard contains the names of the winners, but no mention is made of what they proposed. ■

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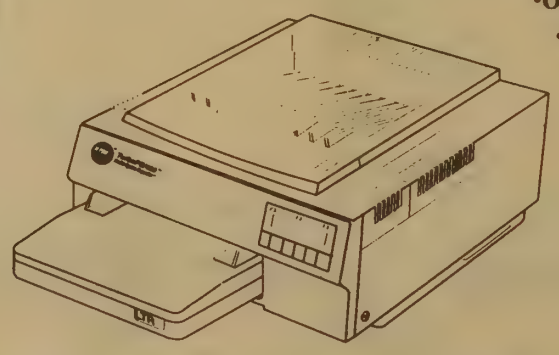

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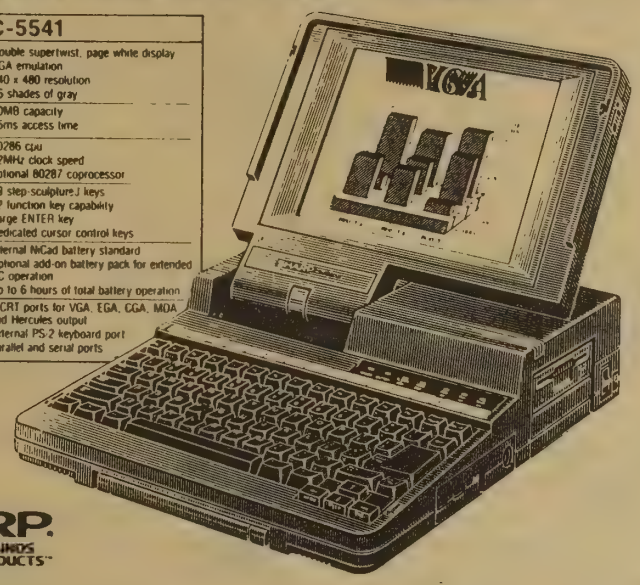

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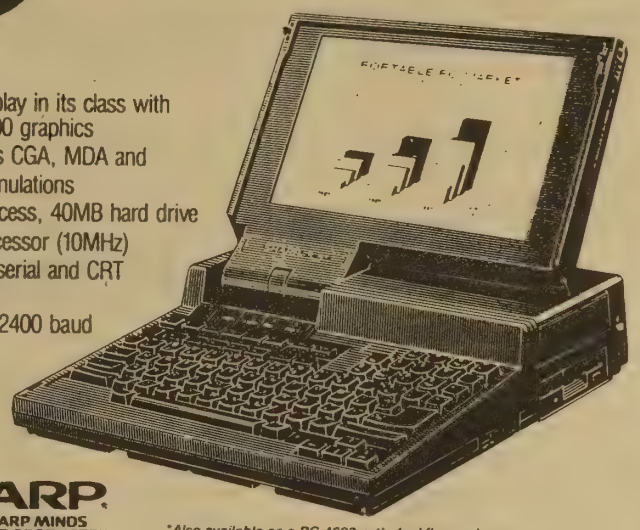

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Bruce Brown, PC Magazine, March 13, 1990 issue

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MAC @ WORK

BMUG

BY DAVID MORGENSTERN

Previewing System 7

Have you been suffering from System 7.0 paralysis, unable to purchase hardware and software without a liberal dose of antacid? Or do you wait by the phone hoping for a lightning strike, or for a friendly system software beta tester to dial your home phone by accident and fill you in on all the details because of all the trouble you'd gone through by answering the phone? Your cure has arrived, thanks to a visit to BMUG by excellent 7.0 development team members.

Mac My Day!

Last September, the plans for BMUG's annual love fest, MacToberFest, were heading down the runway for take-off. John Sculley would talk to the crowds in the evening, after a fun fall day filled with Macintosh good cheer. Unfortunately the Great Earthquake of '89 spoiled all our careful plans, but with the help of our Festival team and the saintly Apple representative, Mary Nicely, the show landed on its feet and kept running.

The event was renamed the BMUG Mac 90 Exposition and moved to the end of January. This year's show went for two days and drew over four thousand Mac junkies who didn't mind the pouring rain outside. First came our amazing demo day, where BMUG volunteers show off the programs they use, or are writing. Apple loaned around 50 Macs for members to demonstrate unusual scientific programs, music, HyperCard—everything! The second day was a vendor show, where representatives actually answered questions. It's the truth, I swear.

There was a full slate of seminars on programming, networking, design, and multimedia. There were chances to discuss HyperCard with developers from Apple, and even a Stump The BMUG HelpLine contest, with prizes for questions the panel couldn't answer. Quite a number of prizes were handed out—not any reflection on the quality of the answers (the panel was handicapped by my presence). Obviously the audience had been saving their brutal tricky worst for months to win a gift!

After the Mac 90 Expo closed its doors, we all ran across campus, through the rain, to see the latest Macintosh holy grail, System 7.0, demonstrated by some of the development team. Wow!

Seventh Heaven

Chris Espinosa, Apple System Software Evangelist, came to demo the new System with a group of 7.0 programmers, including Chris Derossi, Dave Feldman, Steve Goldberg, Dave Harrison, Nik Kledzik, and John Meier. They didn't seem too daunted by the six hundred eager-but-critical pairs of eyes focused on a projected desktop.

Chris began by giving us a preview of the anticipated slogan, *System 7.0 is Macintosh made better.* He played conservative politician for a moment, calming the restless herd with "we're fixing some things, extending some things, and adding some new things. Not throwing out the baby with the bathwater."

Then came the hook, "System 7.0 is a new platform. It will allow you to do things with your Mac that you couldn't do before." And the hope—"System 7 will be within your reach"—that RAM prices will remain low, since the new operating system needs at least 2Mb of memory to work.

Here are some 7.0 tidbits:

• There are many changes to the Finder. Current Macintosh users would call it MultiFinder, but MultiFinder's functionality will be built into the new Finder. System 7.0 gives you no choice but to use the switching environment. Would you rather fight than Switch?

Everyone was impressed by the new searching and access functions built into 7.0. Soon, if you type a letter in a Finder window, you will go to the appropriate file, automatically scrolling if necessary. This will help you find things if you can't see

System 7.0 is a new platform. It will allow you to do things with your Mac that you couldn't do before.

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Shareware Spotlight

SuperClock! is one of the most widely used Macintosh shareware programs in the world. This is due partly to the fact that it is useful and well-written, but also to its price—free! The program is a Control Panel document (CDEV) and throws a digital clock on the right hand side of the menu bar.

The little clock toggles between time, date, and a timer. The author, Steve Christensen, has been constantly updating the product, adding features, and making sure the program is compatible with other applications. This means lots of little but important details, since it's always on the menu. The current version works correctly with MultiFinder, so the time moves a bit to make room for the little application icon. The clock hides when screen-savers that blank the screen are running.

The clock can also be set to chime on the hour. It can chime once, or ring for the same number of times as the current hour. Any sound resource placed in your System file can be assigned to the chime depending on your mood. I have a baby gurgle, chickens clucking, the Dr. Who theme song, and a scream installed. My wife thought our neighborhood had suddenly experienced a violent crime wave.

There was a report several versions ago from someone that crashed in Word 4.0 after chiming a large sound many times. Many Mac programs cache bits and pieces of your work in memory to increase performance, the computer buzz word for speed. Things can get tricky when a 100+ kilobyte sound file is dropped in your system's lap! It must have been late at night, because the user admitted it had been a long time between saves. He was probably one cut and paste from disaster anyway. Be sure to save your work often!

SuperClock! is on BMUG Business 6 disk.

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them. Windows will autoscroll when you reach the edge of the window (perhaps selecting a bunch of file icons)—the crowd applauded this addition.

File finding was added into the system ("the Finder was never good at finding things before"). A Command-F brings up a simple **Find** window. Type in a word and it goes and searches the entire disk. **Find Next** will go through all volumes, showing all things that match. The team reported that on a Mac II with a full 80Mb disk, it takes a little over three seconds to search the entire disk. This function is built into the file system, so it's available as a standard HFS call for any application to use.

The Finder will be able to show file relationships in an outline view. This is similar to the action of the PC and Mac versions of the XTREE utility. Many people like to see what lurks in the folders on their desktops; I've always found it much like living with

Network managers were very pleased to hear that the new Installer is net-wise. You start the process, take a long cappuccino break, and when you return, it has upgraded all your old System 6.0 machines to System 7.0 with one click of the button.

dirty clothes scattered around the floor, not safely out of mind's and eye's way in the hamper. I don't want to be reminded of chores when I click on my favorite game!

An interesting addition to the new Finder is the ability to assign a name to a color. You don't have to remember which color goes with which project, or user. All PC files can be colored blue and the color in the menu labeled "Big Blue."

• There will be a new menu on the 7.0 desktop, now that **Help** has been integrated into the system software. The version we saw, a development version 7.0a5q2, could only tell "what is ...," and will be expanded by release time. When you point at things on the screen, zoom box, or title bar, cartoon-like speech bubbles pop up and tell you what's what.

Unlike other help systems, this **Help** is not "modal." It doesn't force you to turn off the help to get back to work. It displays the information whenever and wherever the user pauses the mouse, but the window and data below are alive. The **Help** bubble vanishes after you act with a (hopefully better educated) click.

Even bombs will be more informative under the new system. The dialog that currently gives you a cryptic System Error ID = 02 will tell you that an "address error" didn't agree with your Mac. The memory-full error, ID 25, dialog will tell you to "buy more RAM." Thanks a lot, guys!

• The demonstration of Apple's code-named Royal font technology was impressive. Even die-hard Adobe Type Manager junkies couldn't ignore the speed with which the fonts were drawn to the screen—on a plain vanilla SE. Everyone was wondering what the words, "Apple's not in the font business," will mean for new users of 7.0. How many fonts will be bundled in the eight-disk set? Perhaps Courier?

The word came though the rumor mills that Apple will announce the real name for the software in March. How does TrueType sound? Are Royal fonts TrueBlue?

• Window title bars now sport triangles next to their names. It's a hierarchical menu symbol, the same as in Standard File (**Open**... and **Save as**...) dialog boxes, that let you scroll to select a higher-level folder.

More good news came about the length of file names appearing in SF dialogs. Past systems could only show about a third of the 31 characters available. System 7.0 will use compressed text if the name is longer than 25 characters.

Evangelist Chris Espinosa said, "You know what the first thing was that I tested with System 7.0?" Someone from the audience yelled, "Excel?" "Nope," he replied, "SoftPC. We have a better compatibility box than OS/2."

• Everyone at the demonstration wondered why the Special menu was replaced by other "S" words, such as SlimFast and Spielberg. This turned out to be an old system development tradition from Steve Capps. It's an easy way to tell at a glance which version is running, since each one has a different Special menu with a word that starts with an "S". And no, they haven't used *the* "S" word—this is a

What is BMUG?

BMUG is a non-profit educational corporation dedicated to collecting, evaluating and disseminating information about computers using a graphical interface. For a while that meant the Apple Macintosh, but now includes other makes, models and operating systems, including the NeXT best thing.

Like any growing organization, it is many different things to its 10,000 international membership. BMUG supports many Special Interest Groups (SIGs), an eight-line Bulletin Board System (BBS), free HelpLine, software library, weekly meetings, and much more. BMUG also puts out a semi-annual 400+ page book that we call our "newsletter."

Our motto continues to be: *We're in the business of giving away information.*

Come and join in the dialogue at the BMUG main meeting every Thursday evening, 6:00 to 9:00 (or whenever we finish), in the Physical Sciences Lecture Hall on the U. C. campus. BMUG West is a meeting held monthly in the Exploratorium, San Francisco's science museum.

The BMUG HelpLine, (415)849-HELP, and our fax number, (415)849-9026, provide technical assistance and telephonic hand-holding during business hours (11:00 a.m. - 5:30 p.m.). If your question can't be answered on the spot, we try get you in touch with someone that can help. Of course, not every problem can have a happy ending—but we try.

BMUG has one of the most up-to-date, comprehensive software libraries around with 400+ double-sided disks filled with the latest versions of public domain or shareware programs and HyperCard stacks. New disks are unveiled almost every week at the Thursday general meeting. BMUG also brings you the *PD ROM™ 2.0*, our entire library and more on CD-ROM—according to Apple, it's the best selling CD-ROM!

Our BBS offers many of the latest versions of files in our software library as well as news, private mail, rumors, etc. The BMUG BBS is part of the worldwide EchoMac Network on FIDOnet (161/444); by calling a local FIDOnet BBS in your area, you would then be able to get in touch with us wherever you are as well as send mail to users everywhere! BMUG is now a part of the international USENET network (apple!bmug!user.name@sun.com) or (user.name@BMUG.FIDONET.ORG). With our multi-line capability you are now be able to have access to BMUG almost 24-hours-a-day. It's easy to use, fun, and a great resource.

To get some further information about BMUG please write to: BMUG, 1442A Walnut Street #62, Berkeley, CA 94709. If you prefer to phone our business office call (415)549-BMUG, or FAX (415)849-9026.

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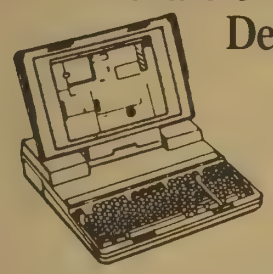

- 16 MHz 386SX microprocessor runs today's and tomorrow's software.
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- Simultaneous viewing of plasma screen and ext. display.
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2-Button Serial Mouse (Identical to Microsoft)	49
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Note: The T3200SX with 13MB RAM uses three 4MB memory modules.
The T3200SX with 11MB RAM uses two 4MB memory modules and one 2MB memory module.
The T3200SX with 9MB RAM uses one 4MB memory module and two 2MB memory modules.
The T3200SX with 7MB RAM, and 3MB RAM all use the 2MB memory modules.

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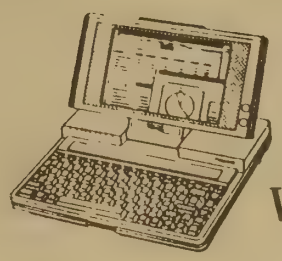

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PG program.

• Chris Espinosa said, "You know what the first thing was that I tested with System 7.0?" Someone from the audience yelled, "Excel?" "Nope," he replied, "SoftPC. We have a better compatibility box than OS/2." It got a good laugh. Ha-ha.

• Macintosh FileShare was a big hit with networking BMUGers. "Both the client and server sides of AppleShare are built in." Now every Mac on a network has file server abilities. The first item under the 7.0 Apple menu is "About this Macintosh," replacing "About the Finder." The integrated FileShare wants to know your name, and your Mac's name. Your Macintosh appears just like a file server on the whole network. People can get files off your own file server. You choose which files and volumes are read-only, write-only, private, or a drop box.

The **Find** abilities of the System have also been added to the AppleTalk Filing Protocol. When you

Macintosh FileShare was a big hit with networking BMUGers. Both the client and server sides of AppleShare are built in. Now every Mac on a network has fileserver abilities.

do a **Find** on a remotely accessed server volume, the server does a **Find** on itself, and then sends results across the network. To do this now using the **Find File** desk accessory can take a few minutes; using the 7.0 Finder's features—four seconds!

Network managers were very pleased to hear that the new Installer is net-wise. You start the process, take a long cappuccino break, and when you return, it has upgraded all your old System 6.0 machines to System 7.0 with one click of the button.

• People wanted to know if the first release of 7.0 would be as buggy as the first try of System 6.0. Chris said that since the development team was using the new software as they were writing the software, they were finding a lot of bugs early. I'm going to handle that software chicken and egg conundrum gingerly.

Apple was already starting to "seed" certain select developers in December with alpha versions, and promised to send all software developers beta copies in the summer.

Finder 7.0 has been rewritten in the object programming language C++. This will "clean up a lot of the crap that's gotten into the Macintosh over the years," says Chris.

• There were a lot of questions about the Apple menu, the home of desk accessories, at the meeting. Mac users love their DAs. Early reports about the new system software claimed that DAs were dead, but they seem to be 7.0 zombies, the walking dead, in the Finders we saw.

A folder called the Apple menu folder sits in the System folder. Anything you want to appear under the menu, drag it in the folder—folders, documents, applications, printers, whatever you want.

• Get used to a new word—Aliases. Think of putting copies of files and documents you often use around your hard disk, and when you use one, they're all employed and updated. An alias copy is not a real copy and doesn't take up much disk space, although it looks and acts just like the real McCoy. If you double-click on an alias, it goes and finds the real copy of the program, document, server, or whatever.

The name of an alias is in italics and the words, "I'm not the real thing, I'm just an alias" shows up in the **Get Info** box. BMUG mainframers say this is similar to UNIX links. I've always thought that was the Silicon Valley golf course.

• Inter-Application Communications (IAC) is the we'll-believe-it-when-we-see-it part of the system. It allows data or commands to be sent between applications or files. Unfortunately all of our software needs to be rewritten to take advantage of these new abilities, and that may take a while.

Program-to-Program Communication (PPC) sits way down in the operating system and lets applications post messages to other applications—if they're running or not! Information exchanged through the Clipboard can now perform a *live* **copy-and-paste.** When you select something in file A, a piece of text or picture, and place it into a document B on your disk, changes in the originating file A are reflected in the pasted file B. This can even work across a network.

IAC will also send commands to other applications. The program receiving the message will ideally obey the commands and send the results back. AppleEvents is the name for the common language that will let programs really communicate. Wingz, FoxBase Mac, and HyperCard are a few of the current applications that have their own scripting languages. Apple hopes they will send these commands as AppleEvents. "What we hope this will do is let an application drive another application, and have the two collaborate."

Backseat driving programs?

There's a long way to go until System 7.0 goes "golden," as software developers call the release of a product. The software is still in the alpha stage, which is still open to additions and revisions of features. Real testing will begin with solid beta versions later this year. Steve Costa, BMUG Technical Coordinator, was impressed with the work that's been done so far—four months ago almost nothing ran under it.

After the meeting, some of us sat with Chris eating Chinese noodles. I mentioned that some of the features were timing- and movement-related (the scrolling windows and the **Help** bubbles). The current system allows users to adjust the double-click timing of the mouse, and the speed of mouse tracking. Every user is different—some have better hand-eye coordination than others. Would the new system allow users to set these new preferences? Chris looked at another member of the team with a silent *another thing we forgot!*

Apple Peels

Next month we'll really investigate the fallout, or falloff, of the latest round of Apple reorganization. I thought you might enjoy a couple of seeds to tide you over:

• A few weeks before the ax fell at Apple offices in Cupertino, pink posters appeared on the walls announcing *Employee Assistance Lunchtime Seminars—part of the surviving corporate change series.*

"In light of the current times, help yourself to understand the dynamics of change, and develop skills for coping with specific or continuous complex changes in organizational structure and duties.

—Address your concerns around change

—Learn how to deal with change and the unknown

—An opportunity to explore your reactions to change and uncertainty."

Perhaps learn how to lift your chin away from your chest so the knife will go in cleanly?

• Saturday Night Live's "news" segment recently showed a still of Vice President Dan Quayle looking into the screen of a computer. The news was "a stunning bit of advertising work this week, as Apple Computer definitively proved that indeed *anybody* can use one of their computers."

• Just as I turned on the modem to send the column to *MicroTimes*, the Apple warranty log-jam broke. They decided that there is an "overwhelming desire" to have a one-year warranty. This offer applies to all customers who purchased any Apple hardware product in the US on or after January 1, 1990.

For everyone else they developed a special sugar-coated AppleCare promotion—the consolation prize! This is a buy-six-months-get-six-months-free promotion. This offer is good for all Apple products purchased back to 1978. The promotional offer will run from March 19 through May 31, 1990.

Apple is calling this coverage a "Global Warranty." This means that hardware purchased in the US can be repaired under the warranty in any country in the world that has authorized Apple service providers. The catch is that the customer must pay for the repair out-of-pocket while abroad, but may make a claim through Apple USA for reimbursement when they get back home. Apple has service centers in more than 80 countries worldwide. Getting a fix from a non-kosher repair shop will void the warranty.

Customers should call Apple Customer Relations at (408) 252-APPL if they have more questions about the new warranty and AppleCare promotion. ■

Upcoming Events:

April 19 Chris Crawford *Balance of the Planet*, SuperMac Hardware.
April 26 Reality Technologies *WealthBuilder*, Solutions Inc. *BackFax.*
May 3 Adobe TBA, Fifth Generation Systems *Pyro 4.0.*
May 10 Scorpion *Sybil* (MIDI stuff), TBA.
May 17 Complete PC, TransPac *TurboWord* (Japanese Translation SW).
May 24 RasterOps (monitors), TBA.

Call the BMUG Office for information about BMUG West, our San Francisco meeting.

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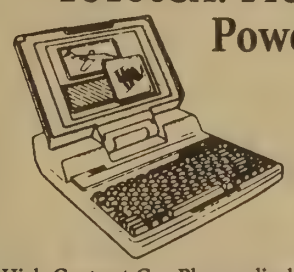

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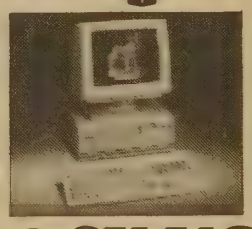

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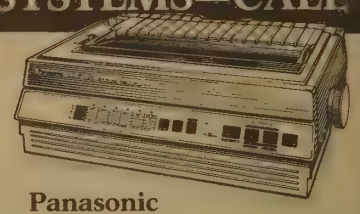

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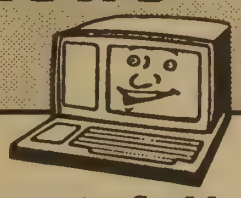

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It's not too late for the A1000 Trade-Up!
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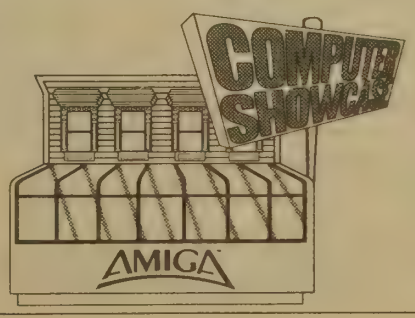

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BY MATTHEW LEEDS

New Life For Old Amigas

In 1985 the Amiga 1000 set a new standard for microcomputers. It offered multi-tasking, 4,096 colors, stereo sound, and the choice of two different interfaces: command line or graphical. Five years later, the Amiga 1000 is beginning to show its age. The A500 and A2000 have replaced it in the sales room, peripheral manufacturers have stopped creating new products for it, and Commodore has just completed a trade-in offer designed to let early adopters move up.

Up to now, A1000 owners have not been missing much by keeping their machines. Most Amigas are expanded via additional memory and a hard disk, and those are still available for the A1000. Accelerator cards adding a 68020 or 68030 CPU are also available. About the only thing you can't do for an A1000 is add a FlickerFixer, and you can't put one in an A500 either.

There is however, change in the wind. Rumors of a new version of the operating system and new hardware have left some A1000 owners feeling concerned. Will they still have an upgrade path? A new version of the custom chip set has begun to ship, with 1 Mb Agnus chips already available, and a new Denise coming soon. The A1000 does not support this new chip set.

A new company has taken up the challenge to keep the A1000 compatible with virtually all of the new features coming for Amigas. Expert Systems has announced the availability of the A1000 Rejuvenator. This device, designed by Gregory B. Tibbs, upgrades the memory and custom graphic chips of the A1000 computer to the levels used by the latest machines from Commodore. It prevents obsolescence and retains an owner's investment in A1000 peripherals.

The Rejuvenator is available in partially and fully populated configurations. The fully populated version will list for $499.95. The partially populated version is less than the 1 Mb Agnus and DRAM, and lists for $349.95. Both versions are fully assembled and tested before shipment.

A fully populated Rejuvenator will contain 1 Mb of new RAM that will be used as graphic memory. The old 512 K of graphics memory on the motherboard is reusable either as true fast RAM, or as 256 K fast RAM and 256 K of write protectable Kickstart memory.

Additional features include a battery-backed real-time clock, and an A2000-style video slot. The Rejuvenator also allows A500 Kickstart ROMs (256 K or 512 K) or Kickstart Disks to be used.

The installation generally requires no modifications to the motherboard. It simply replaces the existing Kickstart daughterboard. Many A1000 peripherals have been tested and found compatible. This list includes SideCar, Insider, Spirit RAM board, Palomax, CMI accelerator, LUCAS, ToolBox, and ECS Denise.

Copyright ©1990. All rights reserved. *Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics, and related fields.*

Other News

In other news, several Amiga software companies have gone out of business, and a few others are tottering on the edge. Most of the products marketed by Aegis and Par are now being handled by Oxxi. In addition, the programmers of Microillusions' Photon Paint are now working on a new product for Oxxi.

Syndesis has shipped the latest version of InterChange, V1.5. The new version includes support for the fast binary format used by VideoScape 3D V2.0 and Modeler 3D, the Metal and Glass2 textures in Sculpt 4D, script files for Sculpt 3D and 4D, and PAGErender 3D from Mindware.

Commodore has special offers running through the end of May for the professional music and video markets. The music bundle adds a MIDI interface and three software programs to an A2000HD with a 1084 color monitor. The programs are Keyboard-Controlled Sequencer V3.0, Copyist Apprentice, and a library software package, all from Dr. T, a leading music software developer. The video bundle adds an A2058 RAM expansion card with 2 Mb to the hardware, and includes TV*Text Professional and Deluxe Paint III. An advanced version of the video bundle includes an A2500/30 with 4 Mb of 32-bit memory, and Deluxe Paint III, Pro Video Gold, and Sculpt-Animate 4D.

Scene Generator

I get sent quite a variety of software to review. Some of it is good, some of it is bad, and some of it makes me wonder what the developer was thinking of. Occasionally I get to see something new and creative. Such was the case when I opened a package from Natural Graphics.

They sent the latest version of Scene Generator. This program creates random fractal landscapes that resemble natural landscapes. It produces 32 color overscanned scenes that can be used in illustrations, as backgrounds for animations, or just as pretty pictures.

The program is very well designed, and remarkably easy to use. All of the options are menu-selectable. You control the amount of detail the program generates, the colors used to paint the scene, the inclusion of snow or clouds, the land height, the direction of the lighting, the inclusion of water, its height and whether there are beaches.

Rumors of a new version of the operating system and new hardware have left some A1000 owners feeling concerned. Will they still have an upgrade path?

Two different overscan modes are supported. One is the same as the overscan used by Deluxe Paint III; the other is a more severe video overscan. You can shift the screen vertically by pressing the up and down cursor keys to compensate for monitor differences, a nice touch. You can save the generated scenes as IFF images, and you can also save just the settings used to generate them. Scene Generator also has a quick "preview" mode that displays a rough draft of the scene in about ten seconds. The final rendering time varies, but can take a few minutes, depending on the settings you've selected.

Shareware Of The Month

Shareware program of the month is Clean V1.01 by Chris Everett. It defragments memory on the Amiga by requesting a very large amount of memory (16 Mb). In addition, it closes the Workbench screen before it allocates memory. It attempts to allocate both chip and fast memory; this flushes all unused libraries and can sometimes give you more contiguous memory. ■

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Apr90-02

BY DAVID HAWKINS

Drakkhen!

A Great Game From France—Better Than Dungeon Master?

I picked up a very interesting game last week—Drakkhen, from Infogrames (yes, there is a "r" in there). I've looked through the box and didn't find any US address or phone number. Evidently they're French—the manual's written in English, French, German and Italian. Some claim it's better than Dungeon Master. I am not ready to make that claim, but it is a very good game.

Drakkhen has great graphics and a good user interface. Some of the visual effects are probably as close to arcade quality as you're going to get on an Atari ST. A wide variety of visual effects are used—it supports multiple points of view. When the group is outside, you can turn in minute degrees, not just 90 degrees. The user interface is nice in that you can use the mouse, the keyboard, or a joystick.

(By the way, if you play the Amiga version you can hook it up to a sound system and hear the special audio effects in stereo.)

There are a few drawbacks. The first is the most important—the manual is barely adequate for such a complex game. I thought getting started was unnecessarily frustrating, but I enjoyed the game once I got going.

A team of four humans is trying to save the human race from being hunted out of existence by the dragons and their descendants. The manual's author seems to think that most game players would be sympathetic to the humans.

The World Of Drakkhen

The manual comes in two separate booklets; the first contains the mythos behind the games. A team of four humans is trying to save the human race from being hunted out of existence by the dragons and their descendants. The manual's author seems to think that most game players would be sympathetic to the humans. At the end of this booklet is a description of the magical spells that can be used in the game. Unfortunately it's not clear what each spell is or how to use it.

The second booklet takes up the description of how to actually play the game. It has some very terse descriptions of how to use your team and how to get started.

Getting Started

First, format a disk and label it for Drakkhen use only. I accidently copied another file to my Drakkhen disk and it trashed it. Drakkhen seems to use its own formatting and filenames.

Then you boot with the second disk and create your four characters. This is a lot like other fantasy role-playing games. The roles are fighter/amazon, scout, magician and priest/priestess. You roll an electronic die and assign these attributes to the character: strength, dexterity, constitution, intelligence and education. These are saved to your newly created Drakkhen disk. Then you reboot the system with the first Drakkhen disk.

Dumb Humans

If you read the less-than-adequate manual carefully, you'll see that each character is carrying certain items. These are not activated until you examine the character and click on each item. I'm not sure on the logic of this. You have a team of highly trained warriors and when confronted with a monster they start beating on it with their fists instead of using their swords? Things look bleak for the human race at this point.

Anyway, the first thing to do when you actually start playing the game is to select each character and activate her/his armor and weapon. Your odds of surviving the first five minutes will increase greatly. As soon as you've equipped your party, save the game. You might be returning to this point fairly often.

You have a team of highly trained warriors, and when confronted with a monster they start beating on it with their fists instead of using their swords? Things look bleak for the human race at this point.

My next gripe was the lack of a specified way to pause the game. It turns out that you can pause the game by examining one of your characters.

Onward?

Well, in roughly 20 hours of play, that's where I am. Just started. My team just doesn't last very long. If I still taught high school I could probably take the Atari to school, turn some kids loose on it and watch them solve it in about 30 minutes.

But I'll keep plugging away. Why? First, it is an interesting game. It's worth a certain amount of frustration. By now I've probably forgotten how frustrating Dungeon Master was over two years ago. And this game really might be better than Dungeon Master.

Oh, and when I get real frustrated at Drakkhen, I play a game of Empire to show that I really can beat the computer. It's nice to have Empire to fall back on.

Portfolio

If you're in a store checking out Drakkhen, take a look at Atari's Portfolio. It's an interesting little computer. I hope to get a review in of it soon. ■

Copyright © 1990 by David Hawkins. All rights reserved. *David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco. Both monitors, an Okimate 20 color printer, and disks are all over the room.*

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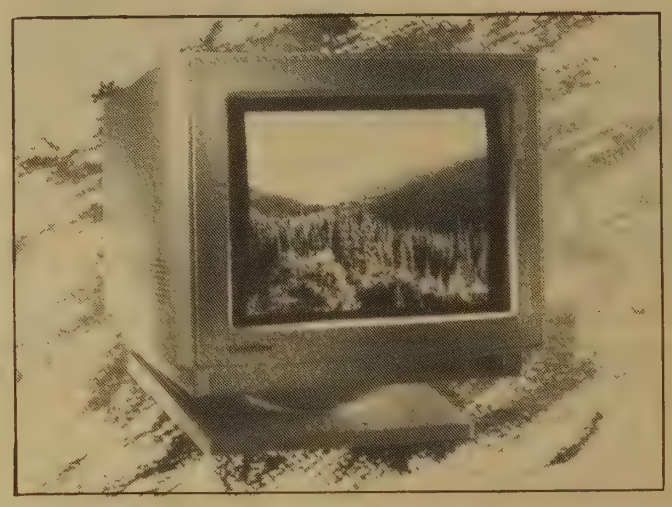

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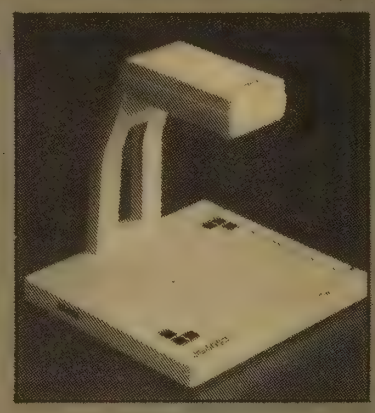

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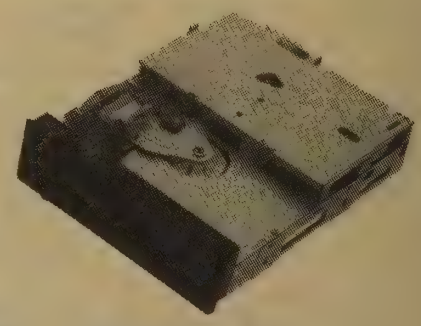

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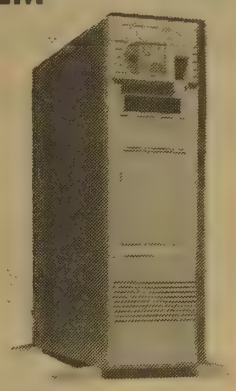

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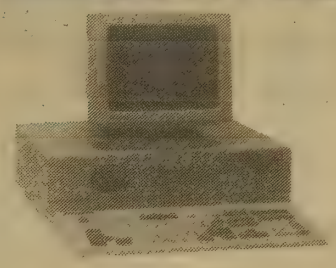

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AMIGROID BBS. (408)683-2534. 300/1200/2400. Amiga only files. Sysop: John Sanders. [Exp. #70.]

Computer Tyme Gap BBS. (408)732-2353. 24 hrs., 7 days. 2400. Alpha site for Gap BBS software, Please add ,,,,2 to your dial string. Sysop: Gary Araki. [Exp. #70.]

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TelePlay FRP. (408)262-4488, 241-4114. 300. 15-line, interactive, real-time D&D, like Gemstone but NO hourly charge. Sysop: Marquee. (408)262-4942. [Exp. #70.]

True Hacker BBS. (408)985-0773. 8-N-1, 300/1200/2400. Public domain source code. Sysop: Bob Matthews. [Exp. #70.]

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415

& the Temple of the Screaming Electron. (415)935-5845. Sysop: Jeff Hunter. [Exp. #70.]

AAA (Amiga Addicts Anonymous). (415)222-9416. 24 hrs., 1200/2400. Amiga Chat & Pub. Dom. files. MNP4. Sysop: Randy Spencer. [Exp. #70.]

Apple Core BBS. (415)665-7851. 6 am–midnight. On-line games, bulletins, messages, PDs, shareware, and more. [Exp. #70.]

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Macintosh Application Group. (415)751-9185, 24 hrs., 1200. Sysop: A.D. [Exp. #70.]

Nightingale. (415)731-2422. Fidonet 1:10/475 Signet 26:1415/0. A general nursing BBS, open to all. "Medfiles," medical and nursing echomail, and "Medware" continuing education programs. Sysop: Jim Rankin. [Exp. #70.]

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Drug Abuse Information (DAIMP). 1-800-825-3736. 8-N-1, 24 hrs., 300/1200/2400. Drug information, statistics, bibliographies, forums, e-mail, downloads and uploads. Free membership, reg. requested. Sysop: Greg Cason. [Exp. #70.]

USER GROUPS

3COM

Bay Area 3Com User Group. Call: Ryan Cornin, (408)957-0943, or 354-7804. [Exp. #73.]

ACCOUNTING

Computer Associates User Group. Meetings: 1st month of quarter on 3rd Wednesdays. Holiday Inn, 1500 Van Ness. Call: Beth E. Markus, (415)864-6770. Come share ideas and information with other local users of Computer Associates Accounting Software! [Exp. #73.]

AMIGA

ALF—Amiga Learners Forum. Meetings: 3rd Sunday, 6:00 pm., Cupertino Library. Call: (408)262-9334. Beginners group. [Exp. #73.]

Amiga ACCESS (Amiga & Commodore Computer Enthusiasts Society). Meetings: 2nd Thurs., 7:00 pm. Livermore/Pleasanton. PD libraries. Call: Paul, (415)829-6053. [Exp. #73.]

ASCITEC: The Amiga Science & Technology Users Group. Meetings: 2nd Thurs., 5-7 pm, Lockheed, B/157, Rm. 4-C, Sunnyvale. Scientific/Video Applications. Classes available. [Exp. #73.]

AWEST Amiga Users. Meetings: 1st Wednesday, 7:00 pm., Computer Showcase, Geary at Masonic. Call: (415)584-8406. [Exp. #73.]

APL

APL Bay Area Users Group. Meetings: 2nd Mon., 7:00 pm., variable. Call: Tibor Horvath, (415)283-5611. [Exp. #73.]

APPLE

Tri Valley Apple II User Group. Meetings: 1st Thurs., 6:30 pm., Call: Dan Balsey, (415)828-6237 for meeting location. [Exp. #73.]

AT&T UNIX

AT&T UNIX Users Group-North Bay. Meetings: 1st Wednesday, 6:00 pm., San Francisco AT&T Bldg., 50 Fremont St. Call: Joe Mahoney, (415)584-6510; BBS (415)829-6027. PM new user education. [Exp. #73.]

AT&T UNIX Users Group-South Bay. Meetings: 4th Wednesday, 7:00 pm., Sunnyvale AT&T Bldg., 1090 E. Duane Ave. Call: Thad Floryan, (408)985-7100 or USNET: the.cup.portal.com. PM new user education. [Exp. #73.]

AT&T UNIX Users Group-Tri-Valley. Meetings: 3rd Thursday, 6:30 pm., Pleasanton AT&T Visitors Center, 4400 Rosewood Dr. Call: Ed Novi, (415)225-2996. PM new user education. [Exp. #73.]

ATARI

ST-ACE (Atari Computer Enthusiasts). Meetings: 3rd Thursday, 7:00 pm., Baptist Church on Sebastepol Rd., Santa Rosa. Call: Hal Andersen, (707)542-1745. [Exp. #73.]

AUTOCAD

AutoCAD DCA Engineering Software Users Group. Meetings: 3rd Wed. Call for location. Call: Mike Foley, (415)734-0707. [Exp. #73.]

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USER GROUPS

Users Group. Meetings: 3rd Wednesday, 7:00 pm. H. Hoover Mid School. Call: (415)626-9946; BBS: (415)431-4829. [Exp. #73.]

dBASE

Clipper SIG. Meetings: 3rd Tues., 8:00 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: J.R. Whiple, (408)243-2796. [Exp. #73.]

Database Design SIG. Meetings: 3rd Tues., 7:00 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Mark Gerow, (408)326-3364. [Exp. #73.]

dBASE IV SIG. Meetings: 1st Tuesday, 7:00 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Fletcher Johnson, (408)283-1333. [Exp. #73.]

dBXL/Quicksilver SIG. Meetings: 3rd Tues., 8:00 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Karl Snyder, (408)846-1814. [Exp. #73.]

FoxBase/FoxPRO SIG. Meetings: 3rd Tues., 8:00 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. Special interest group of the Silicon Valley dBASE Language Group. Call: Mark Scaramella, (408)288-8423. [Exp. #73.]

Silicon Valley dBASE Language Group. Meetings: 2nd Tues., 6:30 pm. Ernst & Young, 55 Almaden Blvd. (Plaza Bank Bldg), San Jose. A nonprofit volunteer organization dedicated to the education and development of database users and professionals. Call: Michael Masterson (408)972-4889. [Exp. #73.]

Ventura SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm. 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #73.]

DESKTOP PUBLISHING

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm. 660 Market St., Ste. 215, San Francisco. Call: Phil Smith, (415)391-1333. [Exp. #73.]

EAGLE

Eagle Computer Users Group. Meetings: 2nd. Sat., 9:00-12 noon. Tandem Computer, 10435 N. Tantau Ave., Cupertino. Call: (408)972-1965. [Exp. #73.]

EPSON

Bay Area Epson Salts. Meetings: 2nd Tues., 7:30 pm. 2611 Broadway, Redwood City. Call: Joe, (415)364-9232, or Tom, (415)992-5475. [Exp. #73.]

FOCUS

NC FUSE—Northern California FOCUS Users. Meetings: quarterly. P.O. Box 61325, Sunnyvale, CA 94088-1325. Sharing FOCUS knowledge and experience. [Exp. #73.]

IBM AND COMPATIBLES

Basic SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)952-3450. [Exp. #73.]

Beginners SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)211-9166. [Exp. #73.]

Columbia SIG/SFPCUG. Meetings: 3rd. Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)566-0587. [Exp. #73.]

Desktop Publishing SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm. 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #73.]

Investment Software Association, a SIG of San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #73.]

Lotus SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)282-4100. [Exp. #73.]

MS Word SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)929-1993. [Exp. #73.]

Napa Valley PC Users Group. Meetings: 2nd Wednesday, 7:30 pm., Buck's lower plaza, 10 Chapel Hill Dr. Call: Bob Kulas, (707)255-9241. [Exp. #73.]

New Users SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)457-0729. [Exp. #73.]

PC Clone Users Group. Meetings: 2nd Mondays, 7:00 pm. Fort Mason Center, Bldg. E, Rm. 287. BBS: (415)621-8425. Call: (415)861-9321. [Exp. #73.]

PC Professionals SIG/SFPCUG. Meetings: 2nd Thurs., 6:15 pm. Call: Kendall Callas, (415)821-1310. [Exp. #73.]

Peninsula Computer Club—"Kay-Fun." Meetings: 2nd Thurs. 7:30 pm. Social Room, Lauren St., San Carlos. CP/M and DOS libraries. Call: BBS: (415)571-9259. Voice: 593-9981. [Exp. #73.]

San Francisco Business Computers. Meetings: 4th Tues., 5:30 pm. Donatello Hotel at Post and Mason. Call: (415)788-5388. [Exp. #73.]

San Francisco PC Users Group. Meetings: 3rd Mon., 3145 Geary Blvd., Ste. 155, San Francisco. Call: (415)221-9166. [Exp. #73.]

Teachers SIG/SFPCUG. Meetings: 3rd Mon., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)982-4221. [Exp. #73.]

WordPerfect SIG/SFPCUG. Meetings: 3rd Min., 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)821-1310. [Exp. #73.]

KAYPRO

Peninsula Computer Club—"Kay-Fun." Meetings: 7:30 pm. Social Room, Lauren St., San Carlos. CP/M and DOS libraries. Call: (415)571-9259. Voice: 593-9981. [Exp. #73.]

MACINTOSH

MacDiablo Macintosh Users Group (MDUG). Meetings: 4th Wed., 7:30 pm. Community Rm., Glendale Federal Bank, 3001 Crow Canyon Rd., San Ramon. Call: Harvey Scudder, (415)828-4995., Rym Maggiora, 829-5501. [Exp. #73.]

Macintosh Application Group. Meetings: TBA. Call: (415)751-9185. Main focus is application support for the user and language programming, all levels. Newsletter is in the making. [Exp. #73.]

ORACLE

San Francisco Oracle User Group. Meetings: 2nd. Wed. Various locations. Call: (415)894-4549. [Exp. #73.]

PROGRAMMING LANGUAGES

Basic SIG/SFPCUG. Meetings: 6:30 pm. UCSF, 3333 California St., San Francisco. Call: (415)952-3450. [Exp. #73.]

Fourth Interest Group Of North Bay. Meetings: 3rd Sat., 1-5 pm. 2055 Center St., Berkeley. Tutorial at noon. Call: Leonard Morgenstern, (415)376-5241. [Exp. #73.]

R:BASE

Peninsula R:Base User Group (PR:BUG). Meetings: 2 Meadowsweet Lane, San Carlos. Call: (415)592-5033. [Exp. #73.]

VENTURA PUBLISHING

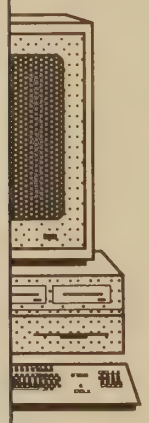
Ventura SIG/SFPCUG. Meetings: 3rd Tues., 6:30 pm. 660 Market St., Ste. 215, San Francisco. Call: (415)391-1333. [Exp. #73.]

PROFESSIONAL ASSOCIATIONS

Digi—Dunces Un-Ominous. Occasionally-not-so-computer-friendly users. [Exp. #73].

Rracsa, For Sysops & Users. Meetings: 2nd Tuesdays, 6:30 pm, CoCo's Restaurant, 1305 S. Mary, Sunnyvale. Call: Irv Hoff, (415) 948-2166. [Exp #73.]

United Sysop's Association! (USA!). Meetings: 2nd Wednesday. 7:00 pm. Vahl's Restaurant, 1513 El Dorado St., Alviso. An organization for Bulletin Boards sysops and users. Call: (408) 453-3321, or Ring-of-Fire BBS, (408)453-33256. [Exp #73.]



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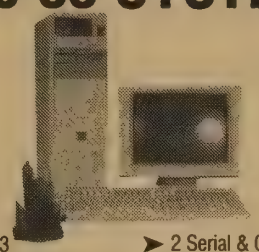
386-33 SYSTEM



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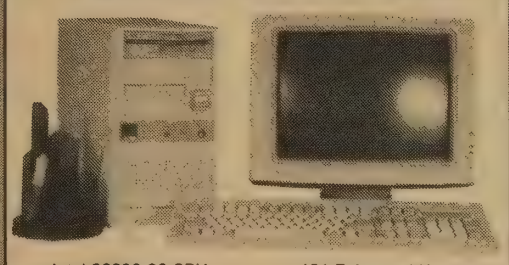
386-20 SYSTEM



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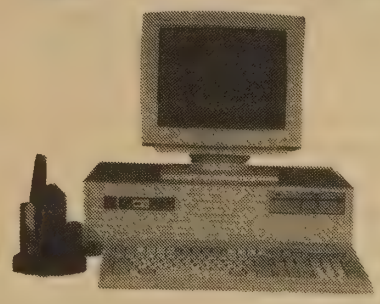

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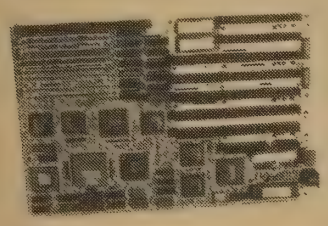

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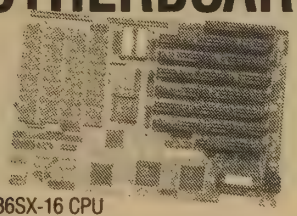

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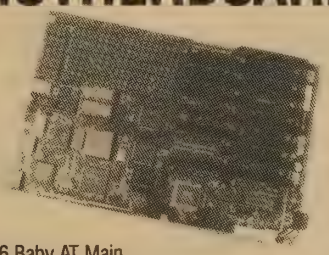

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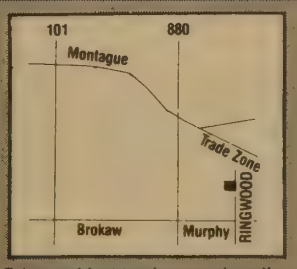

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July 10 Basics To Interactive Media Presentation. San Francisco. IICS. Call: (408)866-7941.

July 10–13 C Programming Hands-On Workshop. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

July 10–13 Object-Oriented Design & Programming Course. San Francisco. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

July 11–13 Dynamic 3-D Computer Graphic Systems for Industrial Design Conference And Exposition. Monterey. BIS CAP International. Call: Kathy Greeley, (617) 893-9130.

July 11–12 Intermediate UNIX Class. Berkeley. Lurnix. Call: (415)849-4478.

July 14 De Anza College Computer Mart. Cupertino. De Anza College. Call: (408)864-8350.

July 16–20 SIAM Annual Meeting Chicago. Society For Industrial And Applied Mathematics. Call: Diana Peirce, (215)382-9800.

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News about user group meetings and other regularly scheduled activities should be sent to User Group Network at the same address.

NEWS AND ANALYSIS

continued from page 44

that this was a big victory, few asked at what price and for how many users. In IBM's own words, the announcement only pertains to computers running IBM's SAA platform. Although some high-end PCs will run SAA, the majority of these systems are machines that are used for computing, not printing. IBM said that it would offer both Adobe font technology as well as Apple/Microsoft technology (now called True Type) in its OS/2 systems. This, in effect, says that IBM only believes in Adobe's technology in places where there was no current technical direction.

Adobe apparently gave IBM its font technology extremely cheaply relative to what it charges other manufacturers for licenses to printer and display PostScript. IBM is quite price-sensitive when it comes to per-machine royalties, so it is likely that Adobe let them have the PostScript licenses cheaply in order to get IBM on their side. IBM would not take the last step and exclude other font technology in their IBM-labelled OS/2 systems, especially since Microsoft is working quickly to make True Type portable to its various operating systems and environments, as well as standard for many large software vendors such as WordPerfect and Ashton-Tate.

IBM doesn't really care which technology is used, as long as its customers on each level feel that they can get the best quality easily. No one really expected IBM to abandon PostScript on the few large systems that now support it, and nothing prevents third-party vendors from writing True Type drivers for those systems.

Microsoft Revolutionizes Site Licensing

In a move that will certainly revolutionize the way that large corporations buy software, Microsoft announced "License Paks" for all of its major software.

A License Pak is essentially an empty box you buy for each person at a site who wants to legally use a copy of the software. The box has no disk or documentation: it only has an agreement card you sign and send to Microsoft and a license card you keep with your computer. There is also an order form for software documentation, but it is likely that most people will purchase third-party books instead, since they are less expensive and usually better than the Microsoft manuals.

The License Paks will become popular because they are less expensive than the regular programs. In many companies, a system administrator does all software installation and often training, so Microsoft's disks and manuals were superfluous. Microsoft is specifically encouraging administrators to do all installation over networks or with customized copies, and has promised that future setup programs will make group installation easier. ■

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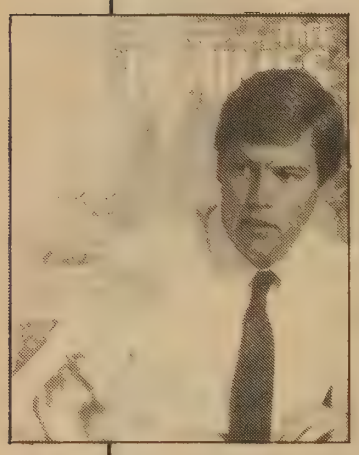

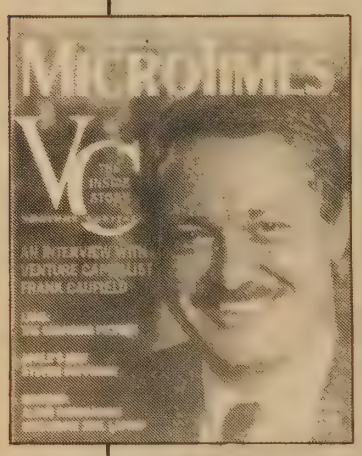

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No. They could be in different geographical locations in cyberspace. Effectively, you could be in multiple places at the same time. There's still one inner train of thought, but you could be seeing and feeling things from several different sources at once.

We've had this strange notion that the mind is local to the body, in fact to the brain. On intellectual grounds, people have argued that that's wrong—Bateson's whole point is that the mind is immanent. Well, VR is going to be the empirical proof that Bateson was right. In the same fashion that AI in some sense is empirical epistemology.

Dan Denner pointed out that the character of philosophy of mind has totally changed in the last decade because of AI. It is no longer regarded as acceptable in the ivory tower—not in the AI community, but in the philosophy department—to do armchair speculation. And VR is going to create this whole new possibility of fieldwork.

It has the same effect of making you suddenly come to terms with the fact that reality is not one of your cut-and-dried matters.

Again from Scientific American: "ON Technology's Kapor faults applications developers for failing to provide a conceptual impetus that would pull capital investment and political consensus towards a more universal service. 'You can't expect Washington to get excited about these things in the abstract;' he says. 'Nobody's thinking about the content side of this.'"

What is the content side of this?

This was in the context of the discussion about ISDN and fiber optic and bandwidth. My observation is that once again the vast majority of the discussion is about plumbing, and I think we ought to be talking about applications. What we're going to do with it, what we're going to push through with it, what the content's going to be, what the tools are going to be for the content. There's no Xerox PARC of this stuff.

Bellcore aspires to be.

But I think research in this area lacks real vision, is generally underfunded and isn't well enough connected to the commercial world.

Within the computer research community, appreciation of the computer as an information and communication medium is still fairly incoherent and isolated as a view.

I think the key is to make people understand that just like print is a medium, and broadcast television is a sick medium (laughs), whole bunches of computers networked together in various ways represent a medium of information communication that is as important and as revolutionary as the printing press.

Once you start thinking about that, it raises a whole set of questions.

Well, what kind of medium is this? How is it different, how is it better than other things, how is it worse, what can it be used for that's different from what we do now? But the fundamental questions aren't being asked, because people do not have that framework of computers as media. I think that's terrible.

But do you think that people even understand what information is?

No. I'm not sure *I* understand what information is.

What do *you* think information is?

Well...information is sort of semi-crystallized mind stuff. (laughs) It's intangible. It's not bits, it's what the bits embody. The problem is that we don't have good ways of talking about these sort of intangible immaterial things. It's why computer software can't be designed well.

When you build a bridge, you're building this artifact, and it's made up of beams and girders and steel.

You know what it's supposed to do.

And when you build a piece of software, you've got these artifacts of objects that make it up, but none of them have any physical embodiment. You've got a menu here and a table there. But they have properties, the things that make up the programs, they have behaviors, they have potential appearances, but we have a totally impoverished vocabulary and conceptual framework. We don't know how to talk about the stuff.

There are a lot of parallels if you go back to Gutenberg. The first books were just like manuscripts—same size, he tried to make them look identical. Big heavy things chained to library tables, incredibly beautiful works of art. It was only over the next half century that people actually invented things like page numbering. And somebody figured, "We'll build an index!"

Well, these are sort of inventions of mind stuff, of intellectual property, that turned out to make all the difference in making the book something that had a high impact on society. They made them small, they made them legible, they put page numbers on them, and pretty soon everybody started reading.

I guess the point is that the kind of thing that information is, and the tools that we want to use to manipulate information, are in this realm of digital media, the same sorts of things as the idea of page numbering, only we haven't invented them yet and we can't really talk about them. So we're

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"I'd say programs that are not only functional but also are pleasant to use actually help you get your work done a lot better than something you feel that you're struggling with."

sort of fumbling around and we wind up spending all our time fantasizing about video dialtone. That's the latest buzzword that I've heard. When you have fiber optic connections from the phone company, the phone company says "We'll give you video dialtone!" Great buzzword, but...

Because otherwise people are just going to be ordering up *Debbie Does Dallas*, and they won't even have to go out to the video rental store.

Doesn't it seem to you that there's an enormous amount of energy and resources going into endeavors that don't really advance the cause much?

Just like reality! (laughs) Yes, I do.

This is certainly not an era of great visible progress. But didn't Mao go off on this long march, they marched like ten thousand miles and went off and lived in the caves for a while?

Are there any software products on the market right now that strike you as being particularly well-designed?

I kind of like After Dark, the little screen saver that you can drop different things into. It's very amusing. (laughs) It's very simple. It's open—you can write these new things to drop in, and it lightens up your life a little.

This actually ties in with something I wanted to ask you about, the importance of humor and playfulness in creation technologically.

Yeah, I think it's very important. There are a lot of different ways of keeping a light touch—sometimes you do it explicitly, sometimes you do it very, very subtly, but things that take themselves too seriously are not life-supporting.

What about people like the basic Lotus power-user? They just want the tool, and they want it to work, and don't bug them with all these side issues. Every time you say, "Well, this is kinda neat," they say, "Yeah, but what's it good for?"

Well, I think they have a point. They're coming to try to get something to help them get their work done, but the question is what sorts of things help them get their work done?

I'd say programs that are not only functional but also are pleasant to use actually help you get your work done a lot better than something you feel that you're struggling with. So I'd say that even to the most hardheaded user, the case for good user-centered design of the products and making the programs be appropriate to the tasks they're trying to perform is completely legitimate.

One could also make a pretty good case that casting all those completely unverifiable projections into the financial future is not necessarily a helpful thing to be doing.

Spreadsheet abuse!

There's an awful lot of hypnotic spreadsheet abuse, exactly.

Well, it's like almost any sort of artifact that has value. It can be abused and is.

The whole idea that people spend extraordinary amounts of time number-crunching—that ties in with the unfortunate trend in society that people have been trying to make money by doing financial manipulations rather than adding genuine economic value. I suppose the spreadsheet has helped that. In that context, we live in a society that does a great many things that are not admirable.

Well, doesn't it seem like we're in a virtual world already?

A virtual world?

Yeah, in the sense of living in these financial realities that are defined by numbers in a spreadsheet.

Well, it's a self-created sort of world. It's hard for me to take a position that some realities are more real than others. It's tempting to say that this world of numbers is virtual but the world of trees and rocks and flowers is the real reality. I'm not prepared to defend that viewpoint.

Thank you. I needed that.

In terms of things that are well-designed, this thing (the Compaq LTE 286) has a lot of problems, but this form factor is just terrific. I can actually carry it around. I run Lotus Agenda on it. It's too big, but it's the best that's available.

This is well-designed. They've managed to get all this stuff into this little box, and the screen is readable. The screen's nice, within its paradigm, and it's light.

I've been thinking about buying one of these, ever since the Mac portable fiasco.

I'd wait. I think the next edition of this is going to have a 386SX, which you want to have. Hopefully they'll put in VGA screens—this is a CGA, so you can't run Windows on it and stuff like that, and they'll put in static memory. The Toshiba 1600, which is a bit bigger, has this great thing where you just pop the button and you're right back where you were. But this is pretty reasonable. You can do real work on one. It's the right size.

What happens when companies quit being able to create, and why is Compaq able to make that, and Apple isn't?

Well, in other parts of their respective product lines, you'd probably rather have a Mac IIci than a Compaq 386/33.

There are a couple of things to be said in Apple's defense on this issue. The first portable that Compaq made, which no one remembers, was this 29-pound thing. And it was fantastic, because until then you couldn't move the thing around with you. So good is relative.

Compaq has been building smaller machines for quite a while. Apple is just earlier on the learning curve. They did one good thing on the portable, which is that they did not compromise quality. It's a real Mac, and feels comfortable to use, and I have one and I use it. I think they could have done an 11- or 12-pound one the first time out.

Or one that wouldn't fall off your knees...

There's a bit more stuff to worry about in the Mac Portable than in one of these. But they better fix it.

I don't want to focus too much on Apple, but there is the question of what happens with technological creation in institution. Closer to home, I watch Lotus struggling with it.

I don't think anybody has solved successfully the problem of how you innovate in a large corporation. It's harder to innovate in a big company than in a small company. The big company has customers who exert a major backwards drag.

Look at IBM.

Yeah, they're a terrific example. Large companies also have multiple constituencies vying for attention internally in terms of what they should do, and organizationally people don't know how to run big companies in a way that preserves people's humanity. I don't know of any.

"The whole idea that people spend extraordinary amounts of time number-crunching ties in with the unfortunate trend in society that people have been trying to make money by doing financial manipulations rather than adding genuine economic value. I suppose the spreadsheet has helped that."

And on the other hand, nobody has figured out how to run an economy with the standard of living that we've got built entirely out of little companies. So we've got a real problem here (laughs).

But don't you think there's a trend there? Don't you see a lot more little companies?

A trendlet, yes. Because now there are better tools available. There are many things that used to require a large company that can now be done in a small company. On the other hand, certain things like building operating systems and big applications require, if you're really going to maintain that, building something of a fair size. There are some unsolved design and unsolved social engineering problems in which there are no really first-rate alternatives. Every alternative seems to have some drawbacks.

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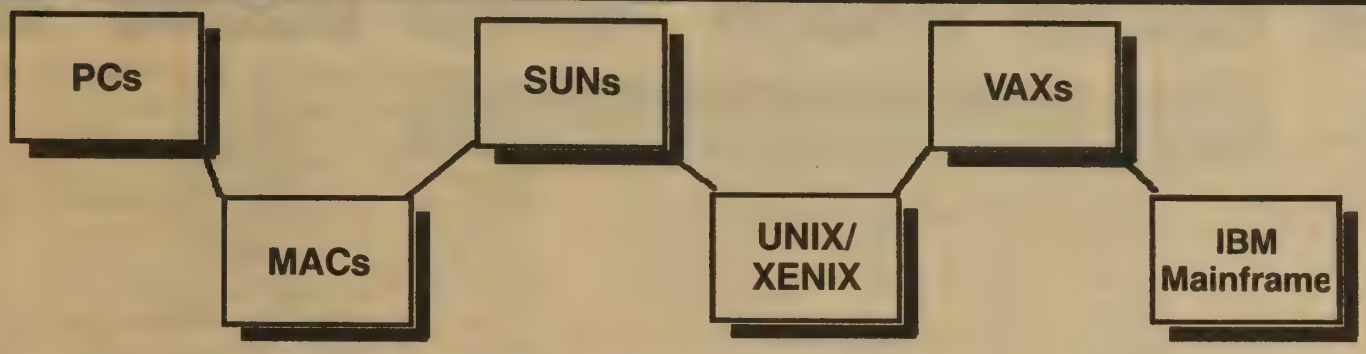

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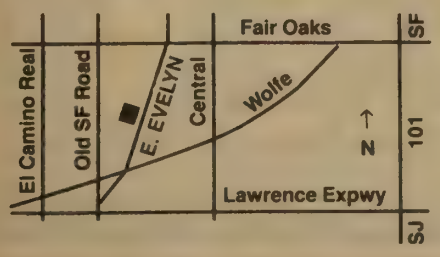

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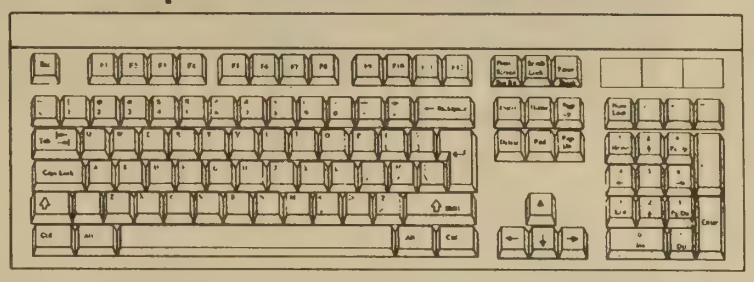

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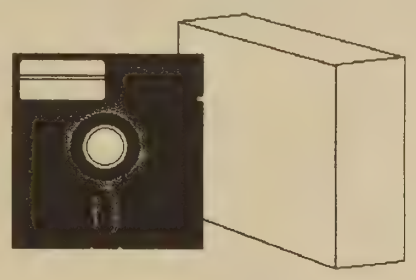

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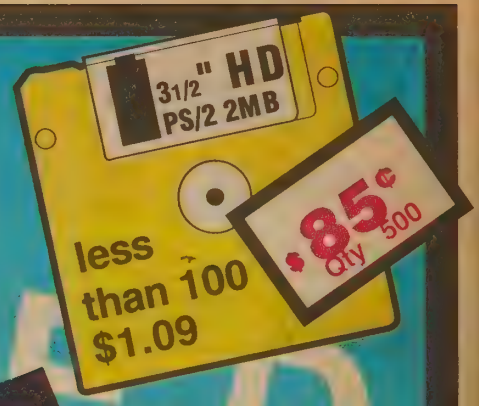

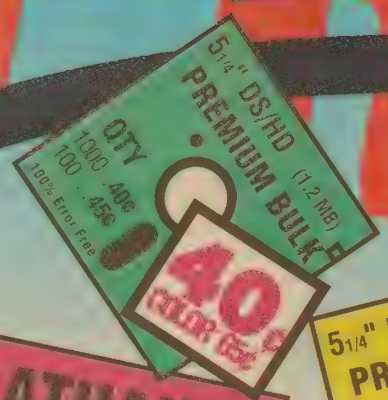

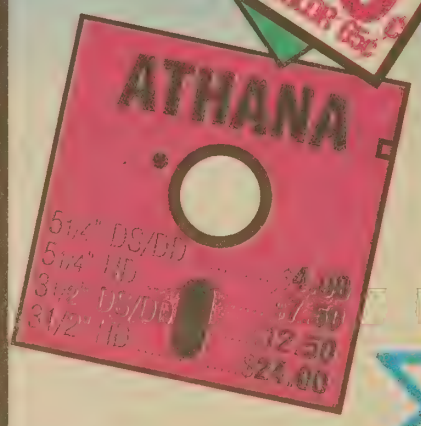

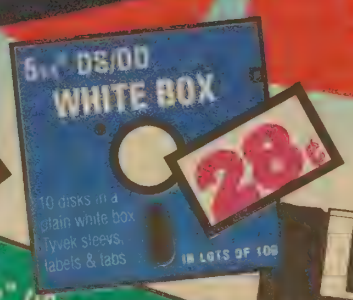

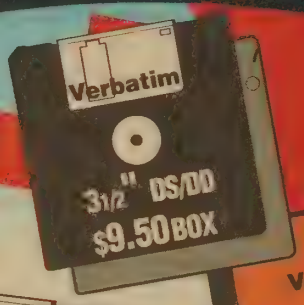

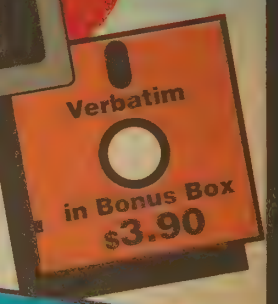

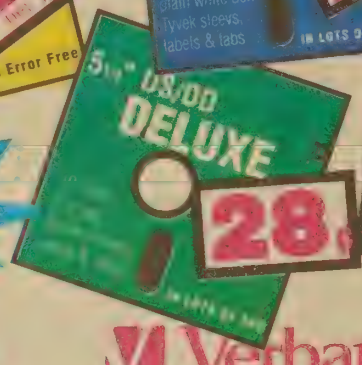

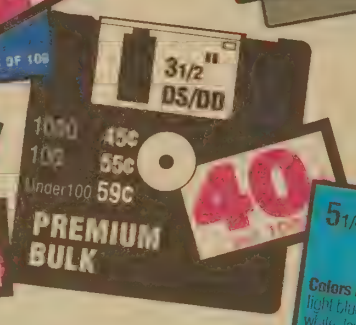

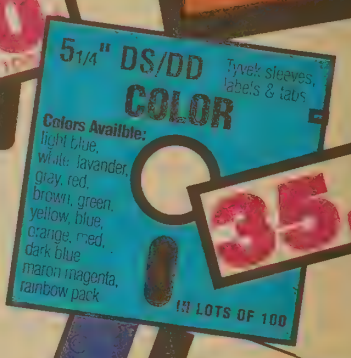
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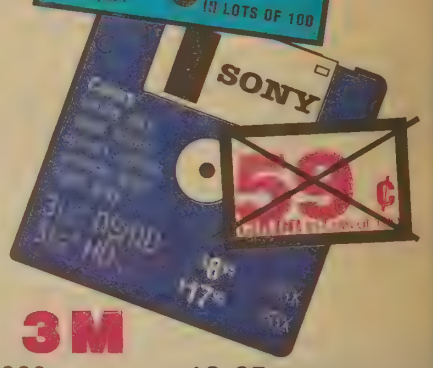

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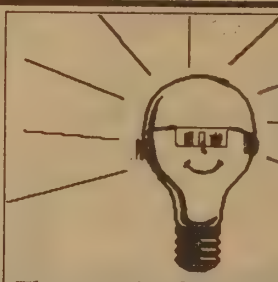

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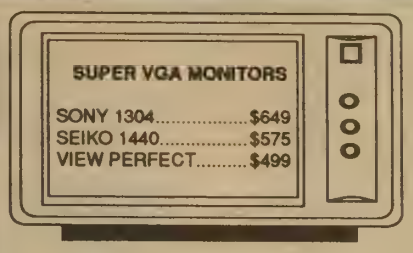

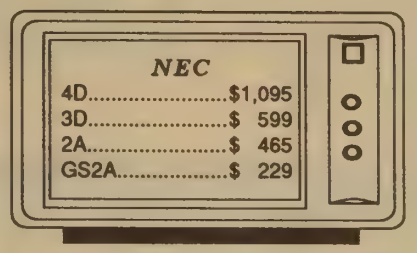

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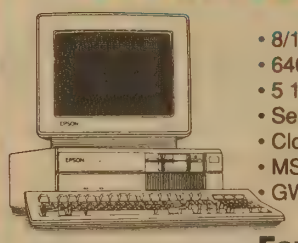

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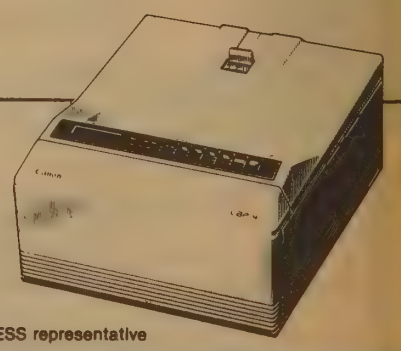

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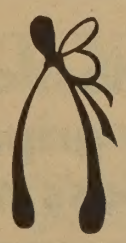

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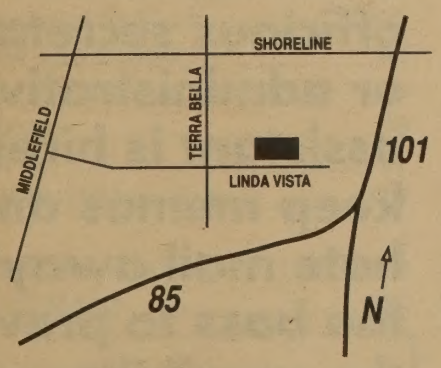

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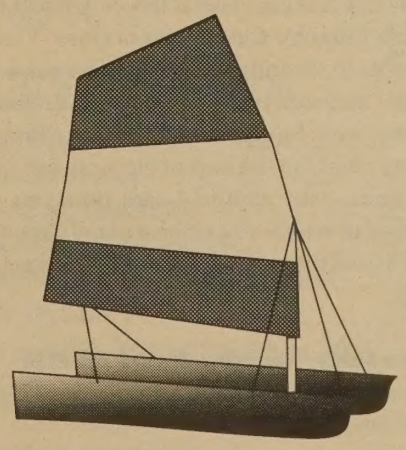

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DVORAK'S LAST COLUMN • BY JOHN C. DVORAK

The Infamous Open Letter

The Only Way To Make A Point In The 21st Century

I think everyone has wanted to sound off to the bigwigs of the computer business about one thing or another. Most of us know that a gripe sent to the boss man of a big company seldom reaches its destination. An officious secretary or administrative assistant is hired to keep memos and hate mail away from the boss to prevent the possibility of constipation and irritability.

I've found that the best way to communicate about anything is to do an open letter in a public forum. It's a trend of the future as CEOs isolate themselves from the public. The distribution of a few hundred thousand copies means it's possible that a copy will sneak through to the boss. Here's a few letters we need passed around:

An Open Letter To Bill Gates, Chairman Of Microsoft

Bill, I have a big complaint. First of all, despite your theoretical wealth, you have refused to spend your personal riches on anything except that house you keep saying that you'll build someday. Where's the boat? Where's the neat-o apartment in Naples? Where's the helicopter with the Microsoft logo on the side? Why haven't you bought a sports franchise? I'm not the only one who wonders about this.

This can't continue. Rumor has it that you fly coach when you travel. What's the point? Do you want to go down in history as a tightwad? A few minutes of interest income can buy the damn jet, and you're flying coach to (I'm told) "set an example" for the rest of the employees! Hey, they should be in business class at the very least! Everyone in this industry flies business class. You meet other people in the industry in business class. Deals are made. Cards are exchanged. In coach you meet people that were bumped from the Greyhound bus or midgets who find the lack of leg room acceptable.

Then again, why should I care how you spend your money or where you sit on a plane? Maybe you actually like sitting in coach. Ok, fine. Forget I said anything.

An Open Letter To John Akers Of IBM

John, what the heck are you guys doing? Hagar the Horrible? Sheesh!

An Open Letter To Steve Jobs Of NeXT

Steve, I know, I know—I never write anymore. I've been so busy and I see you're starting to ship product. So you must be busy watching them robots work, huh? Boy, people really like that machine, as slow as they say it is. Good luck with it!

So it looks like the long-term battle of egos between you and old Bill Gates is a runaway. Gates is starting to look like that UNLV basketball team we saw a few weeks back. He just keeps on making money. What is it? Is he up over $2 billion? Wow! Do you realize that if you made $5 million a year cash in the bank and saved every penny that you'd have to work for 400 years to catch up to him?

It's a lost cause. Gates has won the battle. Maybe you should make friends with him again. He'll be in a good mood over this new Windows 3.0 announcement. Time to give him a call to say hi.

Have you seen Will Hearst lately? You know him, he's the guy who runs the *Examiner* over in San Francisco. Last time you chatted with him you told him to fire me. Remember that? The publisher of this magazine is Dennis Erokan. He hasn't heard from you about firing me from this back page. Give him a call. I'm so glad you keep reading this stuff that you feel obliged to advise my employers about my career path. What a guy!

Last question: Are you going to ever make that computer of yours in beige? I think that's what you need to do to make it sell better.

An Open Letter To Scott McNealy, Sun Microsystems

Scott, hey, we haven't talked for a while. So I hear that you were roaming around some hotel hallway with Rod Canion of Compaq the other day. Was it some secret meeting? Is there some merger thing happening here? Or what?

Don't you think it was a laugh riot that it was John Markoff of the *New York Times* who ran into you two? He probably told everyone he knew about it. He told me. I couldn't stop laughing when I heard the story. You can run, but you can't hide.

So I figure by putting this information into the public domain I clear myself of trading on insider information if I should speculate on a massive merger. Then again, I'm not sure which company would go up. Maybe they'd both go down! Maybe I'll stick to mutual funds and just watch. My advice is that you guys find better places to meet—like in Houston.

Anyway, I was thinking about what an interesting situation we'd have if Sun and Compaq merged. I mean it's possible that your meeting was coincidental. You may have both been at a memo-writing seminar or something. I'd call to ask, but what are you going to tell me? No secrets, that's for sure.

Whatever the case, maybe you should merge with Compaq. You might have a real killer company. Compaq knows how to sell through dealers, unlike your company. You know the mini market, unlike Compaq. There are a lot of synergistic aspects to such a deal. The problem is that you and Rod can't *both* run the company and I'm sure neither of you wants to relinquish control. I mean you're both having so much fun and rolling in dough and all. So I figure it will never happen.

I'm just wondering if this open letter will run up the stock price or not. You know, this is how rumors get started. Your meeting with him was probably to discuss some mundane aspect of BMW repair. Anyway, keep up the good work. This is all the free publicity you'll get from me this year.

Open Letter To Lee Iaccoca, Chairman, Chrysler Corporation

Lee, it's good to see your face on TV so often. But I miss that old ad you did where you walked down the assembly line, then stopped to talk. You rested your hand on a spot welder anode, did you know that? It didn't seem like a smart thing to do, if you ask me.

Anyway, I've included you in these open letters because many observers think that the computer business is slowly going the way of the car business. Someday there will be very few makers, little innovation and plenty of complaining. You know, like you and your firm. I'm not looking forward to it since we already have too many people bellyaching about one thing or another. Please do us all a favor—stop setting this bad example, get off TV and go do some real work. Look at Bill Gates, you don't see him complaining! Thanks. ■

Most of us know that a gripe sent to the boss man of a big company seldom reaches its destination. An officious secretary or administrative assistant is hired to keep memos and hate mail away from the boss to prevent the possibility of constipation and irritability.

John C. Dvorak graduated from the University of California. He is a contributing editor of PC Magazine *and* MacUser, *and is considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.*

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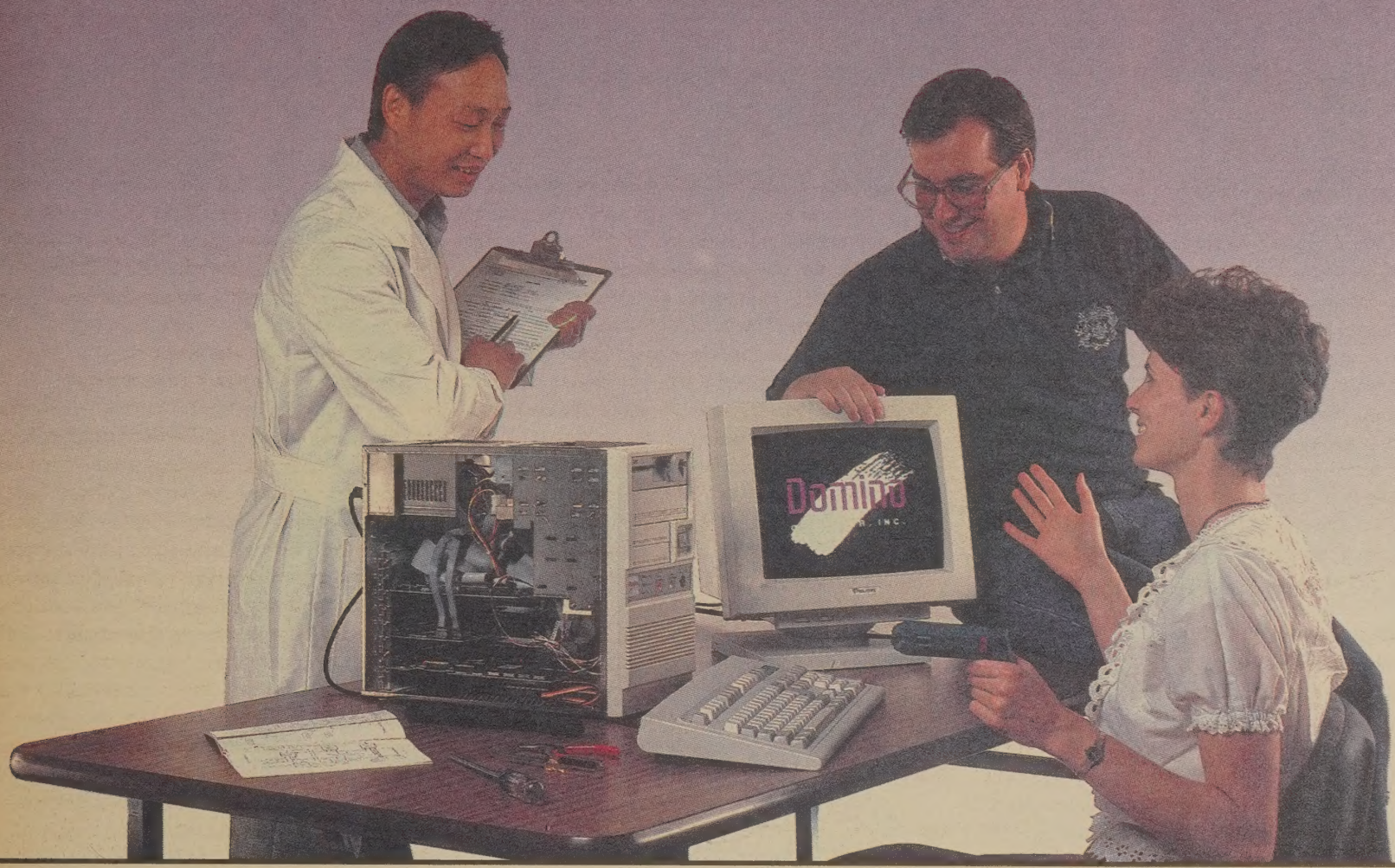

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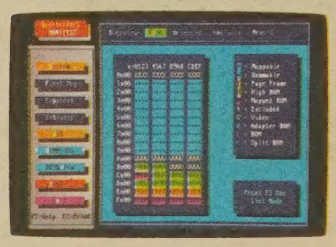

Manifest shows you things you might not otherwise know about your PC.

Manifest gives you a guided tour 'under the hood' of your PC, to show what's going on, what type and amount of memory is available, and even which portions of RAM are faster.

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